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ABSTRACT

This literature review provides a policy-oriented overview of the major work on schools as learning organizations. It is representative of the literature through 1999. The first section, "Learning Organizations in Non-School Settings," discusses what organizational literature has to offer the discussion of learning communities or learning organizations. It highlights definitions of organizational learning; individual and group learning; cognition and behavior as objects of attention; knowledge and skills or values and attitudes; open system requirements in learning organizations; structural and interpretive approaches; and knowledge as description or prescriptions for improvement. The second section, "Learning Organizations in School Settings," reviews educational literature that relates to learning communities, looking first at individual learning perspectives of students and teachers and then at the collective learning in schools. The third section, "Contextual Factors Affecting Learning Communities: Policy and Leadership," discusses contextual factors affecting learning communities in schools, namely, the policy context and changing leadership requirements. The conclusion draws parallels between the two broad literatures, points out disagreements and gaps in the knowledge base, and names issues requiring further investigation. (Contains approximately 434 bibliographic references.) (SM)

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Schools as Learning Organizations: A Review of the Literature

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SCHOOLS AS LEARNING ORGANIZATIONS:

A REVIEW OF THE LITERATURE

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OVERVIEW

The purpose of this literature review is to provide a policy-oriented overview of the major work on schools as learning organizations. This review is representative of the literature through 1999. The review should be viewed as illustrative rather than a comprehensive review of all the work in this area. For example, we have only sampled the vast and growing literature on teacher learning. Readers wishing a more complete exposition of that literature are referred to the recent excellent reviews and commentaries by Cochran-Smith and Lytle (1999) and by Wilson and Berne (1999). Rather, we have chosen to include policy and leadership as contextual factors affecting the creation of learning organizations.

This literature review is organized as follows. The first section discusses what organizational literature has to offer the discussion of learning communities or learning organizations. The second section reviews educational literature that relates to learning communities, looking first at individual learning perspectives of students and teachers and then at the collective learning in schools. The third section discusses contextual factors affecting learning communities in schools, namely, the policy

context and changing leadership requirements. The conclusion draws the parallels between the two broad literatures, points out disagreements and gaps in the knowledge base, and names issues requiring further investigation.

LEARNING ORGANIZATIONS IN NON-SCHOOL SETTINGS

Increasingly over the past 20 years, there has been an interest in organizational learning (Argyris & Schön, 1978; Dixon, 1994; Mintzberg, 1979; Revans, 1982; Senge, 1990a). Our reading of literature in various fields such as management science, change management, organizational theory and education suggest a range of definitions, characteristics, and descriptions of learning organizations.

The interest in the importance of organizational learning can be linked to current pressures for change facing many organizations. This interest has been heightened because many view traditional structures, processes and behaviors as impediments to the dynamic change required of organizations (Argyris & Schön, 1978; Drucker, 1996; Mabey, 1994; Senge, 1990a; Wheatley, 1992). There is an ever-increasing need for organizations and their people to strengthen their abilities to recognize external signals; analyze increasing volumes of information on their trade, industry, or profession; approach problems more systematically or conceptually; and challenge widely held assumptions or "mental models" (Mabey, 1994; Schön, 1979; Senge, 1990a, p.174).

Definitions of Organizational Learning (hereafter OL)

As Rait (1995) points out in a review OL, competing perspectives have prevented the adoption of a single definition of OL. A number of reviews have pointed to its fragmented quality (e.g., Huber, 1991). Accordingly, a sample of the ways OL has been defined includes (Moingeon & Edmondson, 1996, p.18; Rait, 1995, p.72) detection and correction of error (Argryris & Schön, 1978), using feedback from previous experience to choose among present alternatives by encoding and modifying routines (Levitt & March, 1996), acquiring and distributing knowledge useful to the organization (by which an organization expands its repertoire of actions) (Huber, 1996), increasing organizational capacity to take effective action, interpretation and sense-making (Weick, 1996), developing knowledge about action-outcome relationships (Duncan & Weiss, 1978; Meyer, 1982), and successful restructuring of organizational problems (Simon, 1971).

The burgeoning literature on OL embraces a variety of different definitions and conceptual approaches. It is useful to summarize the literature as characterized by six dimensions. Many dimensions capture the key differences among these approaches, although some describe an overall consensus.

- where organizational learning takes place: within individuals and groups
- cognition and behavior as the objects of attention (Rait, 1995)
- the role of knowledge and skills as well as values and attitudes
- the importance of an open system approach in OL
- structural elements and interpretative requirements in OL (Daft & Huber, 1987)
- descriptive theory or intervention as goals in building a knowledge base (Moingeon & Edmonson, 1996)

These dimensions are found in different combinations and overlap with one another in a number of ways in particular models. They cannot be collapsed into a smaller number of dimensions without doing injustice to the approaches to organizational learning taken by different authors. We will use this dimensional taxonomy as an organizing framework for the review of OL in non-school contexts.

Individual and group learning

The primary unit of analysis in OL is one critical dimension in the literature (Moingeon & Edmonson, 1996, p.18). Some researchers focus on how individuals learn in an organizational context, while others study how organizations learn. Strata (1989) provides an individual perspective by describing how individual learning contributes to competitive advantage in an organization. Such approaches do not ignore organizational structures and processes. Rather, the latter are viewed as sources for eliciting employee learning and personal development. According to Argyris and Schön (1974) individuals acquire theories-in-use, i.e., cognitive maps. Senge (1990a) describes mental models. Individual reasoning processes can lead to exactly the opposite outcome from that intended and reinforce anti-learning personal dynamics (Argyris, 1982). These theories in use and mental models can either make individuals more effective decision makers in organizations or prevent them from being effective. Defensive reasoning techniques are one example. Individuals operate on faulty premises and inferences which are not subject to empirical validation. They are trapped in "single-

loop learning" which is self-reinforcing and prevents them from seeing their own responsibility for creating and maintaining organizational conditions which are anti-learning and noncorrective (1993, p. 243, quoted in Cousins, 1996, p. 634.) The field of system dynamics (Forrester, 1961; Sterman, 1989; Senge, 1990a) emphasizes how cognitive features both create organizational structures (which in turn produce results) and can overcome problems through more complex mental models and awareness of personal causal responsibility. These dysfunctional habits, originating in individuals, in turn have their reflection at the organizational level in defensive routines (e.g., Argyris, 1990).

Other approaches to OL primarily emphasize the group, rather than the individual, as the critical unit requiring attention. *Organizations* can learn to change, but OL can also interfere with the capacity to be effective. Organizations can engage in superstitious learning and acquire competency traps. Habit, routines, and imitation dominate and interfere with the capacity to take rational action by seeking better alternatives (Levitt & March, 1996). According to Moingeon and Edmonson (1996, p.19), this approach sees learning as "the accumulated residue of past inferences, which are encoded into routines." Working within this group perspective, some theories emphasize the mechanisms by which organizations can acquire knowledge which expands its range of potential actions. Encouraging intelligent participation by organizational members by provision of relevant information is one such strategy.

Much of the group literature in OL emerges from a social learning perspective (e.g., Bandura, 1977, 1986). Learning occurs as a result of interactions between personal factors and environmental events and behaviors. Individuals construct knowledge symbolically and employ shared meanings rather than relying only on personal experience or simply processing "factual" information. This social dimension of learning makes it impossible to equate individual and collective problem solving. For example, roles, procedures, forms, and conventions (all part of organizational routines) all are influenced by the way organization members interpret past events (Leithwood & Aitken, 1995).

The concept of organizational culture is an important construct in the group perspective on OL. Schein (1992) defines culture as

> a pattern of shared basic assumptions that the group learned as it solved its problems of external adaptation and internal integration, that has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems (p. 12).

According to Schein, OL is a kind of learning, acting as a learned product of group experience. Organizational cultures make assumptions about reality, truth, time, and space, as well as about human nature, activity, and relationships. These cultural assumptions are embedded in organizational process and structures and provide the organization with stability. Organizational cultures can be dysfunctional; widely shared values and tacit assumptions can block organizational learning. Organization members need to become aware of their cultures, and leaders must understand those cultures if they are to lead rather than have the cultures manage them.

While some theorists of OL put individuals in the foreground and others place the organization first, it seems apparent that these two approaches are not dichotomous. Both individuals and groups cause organizations to act, and the effects of these actions are felt at both levels. The theorists differ in what they see as primary and secondary causes and how appropriate action is taken to assure that productive OL occurs.

Cognition and behavior as objects of attention

Theorists tend to divide clearly, however, on the question of what is required for OL actually to occur. For some scholars (e.g., Huber, 1996, p.89; Cousins & Leithwood, 1986), learning is acquisition of knowledge which has the potential to change organizational behavior. This potential for changing behavior is conditioned by the degree to which such knowledge becomes widely shared among individuals and groups in the organization, in order to permit the generation of various points of view concerning what should be done. Knowledge can be information-processing, sense making and shared agreement (Weick, 1996), or awareness of culture. Whatever its specific manifestation, OL entails the development of new forms of understanding by individuals and groups.

Others argue that learning requires something more. For example, Argyris (1993) refers to detection of error (a mismatch between expectations/intention and what actually happens). That in itself is not *learning* , however. Learning requires the additional step of taking corrective action. The action may be limited in scope, as in the case of single-loop learning (discussed below) or it may be more comprehensive, e.g. double-loop learning (also discussed below). Whichever, learning only occurs when error detection is taken a step further into the realm of action.

Obviously, the cognitive frame influences the subsequent action. If action is based upon incomplete information or faulty premises, it is likely to be ineffectual. So those who insist on action

as a component of learning do not ignore cognition. Also, much action which takes place in organizations is based upon little thought (Fiol & Lyles, 1985); in other words, there can be many behavioral changes but little learning. The ability to act effectively after detecting an error is challenging for several reasons. There is a gap between stored knowledge and the knowledge necessary to respond effectively. Contexts change constantly, and effective actions must be reliably repeated. The core of OL is generation of "actionable knowledge" (Argyris, 1993, quoted in Cousins, 1996, p. 617). In turn, there are many approaches to specifying the requisite action. These approaches turn in part on assumptions about what needs to be learned and the mechanisms by which learning occurs.

Knowledge and skills or values and attitudes

We have hinted at this distinction already. Mental models, theories in use, and related concepts conjure up the conception of learning as largely cognitive, as distinct from affective. Individuals acquire and process information and try to make sense of it. Their capacity for memory also is grounded in information acquisition (Simon, 1991) and in encoding information (Tiler & Gibbons, 1991). Skill development often is seen as an analogue to this view of learning, since the acquisition of information is the prerequisite for applying it in one's work. Application may require practice, but it is grounded primarily in effective knowledge transmission by a change agent to the employee.

This cognitive perspective has given rise to theories of OL which emphasize information encoding, paths for transmitting knowledge, allocating/filtering information (e.g., Tiler & Gibbons, 1991), as well as how information is diffused (Brown & Duguid, 1996). Hedberg (1981) proposed that organizations have information management systems which influence how much information is available to members, how current it is, and how accurate it is. Some argue that information technology will aid in information retrieval and organizational memory. Program evaluation also can play a role in providing feedback on organizational performance (Huber, 1996; Jenlink, 1994).

Not all cognitive learning, of course, is of equal value. At the individual level individuals have "theories in use" which contain basic unquestioned assumptions which often are at odds with espoused theories of action. They commit so-called "first-order errors" because of incorrect models of action and are trapped by "single-loop learning" (Argryris & Schön, 1996). At the organizational

level these errors are reified in organizational learning systems characterized by "second-order" errors that arise in processes of organizational inquiry, such as not questioning existing practices, and permitting first-order errors to arise and persist. Model I theories in use, e.g., "design and manage the environment unilaterally," "own and control the task," "unilaterally protect yourself and others from being hurt," combine with organizational defensive routines. The latter are defined as any actions, policies, or practices that prevent the experience of embarrassment or threat, and at the same time prevent discovery and reduce learning about the cause of the embarrassment or threat. Organizational defensive routines are the most powerful learning systems that limit learning at all levels of organizations (Argyris & Schön, 1996, p.5). Organizational members are inhibited from achieving *double-loop learning* , which consists in questioning, information-gathering and exchange, and reflection to get at such errors (Argyris & Schön, 1996, p. 290). *Single-loop organizational learning* occurs when errors (a mismatch between intention and what happens) are detected and corrected. Double-loop learning requires a change in underlying values and appropriate actions which follow. In short, OL can be understood as operating at different *levels* with different impacts on the functioning of the organization. Single-loop learning may improve organizational efficiency but will not be satisfactory where environmental demands require highly innovative organizational responses, which can only be conceived where underlying beliefs and assumptions in the organization are revealed and scrutinized. Senge (1990a), in a similar vein, distinguishes between adaptive and generative learning. Ciborra and Schneider (1992) distinguish between incremental and second-order learning. Moingeon and Edmonson (1996) define *learning how* as organizational members engaging in processes designed to transfer and/or improve existing skills and routines. It fits the "recipe" or training approach to instruction in which someone is taught how to do something without understanding why. They define *learning why* as organizational members inquiring into causality using diagnostic skills. Teaching involves helping people learn to discern the underlying logic and causes in a situation. Thus, in all of these frameworks the higher-order learning involves questioning assumptions, such as the appropriateness of goals, policies, and routines, knowing how to (and recognizing the legitimacy of) reframing problems, and recognizing the subjectivity of meaning associated with any problem.

Argyris and Schön (1978) refer to *deutero learning* as the capacity by organizational members to contemplate their own learning strategies and thus engage in meta-learning processes. This has been incorporated in some organizational design frameworks which use a systems approach to engage in continuous quality improvement (discussed below).

Social perspectives on learning employed by some OL theorists lead their work in somewhat different directions. These theorists tend to focus on affective dimensions, although the dividing line between cognitive and affective phenomena often is blurry. Simply stated, social learning theory asserts that individuals learn in social contexts, by becoming more aware of their cultural assumptions, by working collaboratively with colleagues, and sharing information, receiving and providing feedback. Even cognitive features such as memory are shaped by rules, cultures, and technologies which are products of socialization and control (March, 1996). Thus, providing individuals with opportunities to participate in organizational decision making and to conduct action research (Argyris & Schön, 1991) can lead to trial and error learning in which environmental effects of actions are reexamined and new meanings are constructed (Comfort, 1985). This social perspective also emphasizes how powerful features of organizational cultures make it difficult if not impossible to change individual behavior regardless of what new information is acquired by individuals. Thus, the group context provides a forum for developing a shared sense of problems, and for confronting and unlearning norms, routines, values, and so on which interfere with the effective action.

Strong organizational cultures also provide a normative framework for organization members to sift through complex and contradictory events and find shared meaning. For example, an organizational ideology can reaffirm the organization's understanding of itself, its core values, how it gets things done, how it handles crises, and how it interprets current realities (Schein, 1992, pp.90-91). While cultures can help organizations learn how to change (Schein, 1992), they can also stifle creative problem solving both by individuals and groups.

Open system requirements in LOs

Schein (1992) observes that all organizational cultures must develop a means both for internal integration and external adaptation. This latter requirement has given rise to approaches which stress the importance of acquiring knowledge from the environment. These approaches can be described as being informed by open-system perspectives on organizations, in which considerable attention is

given to interpreting and responding to changes in the environment.

Developments within organizational theory and management science have emphasized the need for paramount attention to external environmental forces alongside an organization's task requirements. The concept of *high performance work systems* is an integrating concept which captures various innovations animated by the same underlying design principles and practices (Nadler, Gerstein & Shaw, 1992). This open systems perspective begins with external stakeholders (customers, suppliers, competitors). Environmental demands and opportunities precede the design of specific social and technical systems. According to Nadler et al (1992, pp.115-16; also see Hanna, 1988), there are five principles of sociotechnical work design. Briefly stated they are:

1. Specification of rules should be kept to a minimum.
2. Variances, or deviations, from the ideal design should be specified in advance.
3. Workers should be skilled in more than one function in order to assure a flexible and adaptive work system.
4. Interdependent roles should be specified within departments.
5. Information systems should be designed to aid problem solving at the point of action.

In the same spirit, Nadler et al specify ten design principles which can serve as a guide in designing specific organizations. These are customer- and environmentally focused design; empowered and autonomous units; clear direction and goals; control of variance at the source; socio-technical integration; accessible information flow; enriched and shared jobs; empowering human resource practices; empowering management structure, process, and culture; and capacity to reconfigure. Taken together these principles are a major departure from the principles of machine bureaucracy inherited from Frederick Taylor and Max Weber.

The systems approach attempts to institutionalize a focus on continuous quality improvement by developing key measures and indicators of performance, linked to key processes and key mission results. This approach, developed by Malcolm Baldridge, had a profound influence on major private-sector firms such as Westinghouse, Motorola, Xerox, General Motors, IBM, and Federal Express.

Therefore, the OL literature focuses on the importance of acquiring knowledge from the environment. The organization's capacity to interpret changes coming from the environment requires both problem-sensing and problem-solving processes (Kiesler & Sproull, 1982). Problem sensing is

represented by "the cognitive processes of noticing and constructing meaning about environmental change so that the organization can take action" (Cousins, 1996, pp. 629-30). Scanning, focused search, and monitoring are strategies employed to make sense of the environment (Huber, 1996). Grafting is another adaptive strategy for acquiring new knowledge about the environment. Processes for acquiring information may include highly routinized processes and quantified measures acquired through scanning and monitoring. Some organizations try to receive input from the environment by making direct contacts and group decision systems (Daft & Huber, 1987).

Organizational environments differ in their stability and turbulence and in other key elements. Organizations develop belief systems and routines to cope with this complexity. In other words, their culture in part determines how they respond to their environment. Some develop effective responses which are largely adaptive (single-loop learning) while others strive to reshape the environment. OL theorists tend to stress the importance of strategic choices in response to environmental forces, as distinct from population ecology theorists, who focus on organizational selection and survival (Mohrman & Mohrman, 1989, p. 41). Some focus upon exploration of new possibilities, while others concentrate on exploitation of old certainties in OL (March, 1991); exploitation is often productive in the short run but destructive in the long run. Levinthal and March (1981) link environmental search with organizational experience. When environments are changing rapidly, however, there is a tendency for first-order (single-loop) actions to reduce the likelihood that second-order (double-loop) learning will occur. Executive succession, however, may trigger the latter (Virany, Tushman & Romanelli, 1992).

Structural and interpretive approaches

Theories of OL do not all proceed from the same assumptions about how organizations function. Daft and Huber (1987) distinguish between the system-structural perspective and the interpretive perspective. The structural perspective assumes that organization members confront objective facts in their environment which they can understand by acquiring information through instrumentally rational search strategies (Lovell & Turner, 1988, in Cousins, 1996, p. 620). They are sensitive to this information and in processing it, try to distinguish cause from effect. They are motivated primarily by goal attainment, on which there is fundamental consensus in the organization. They are skilled in using data. Their actions follow directly from their understanding of these facts

and their commitment to organizational goal attainment.

The interpretive perspective assumes, on the other hand, that the meaning attached to data and events is ambiguous and inherently open to misunderstanding and debate. Organizational systems give meaning to data. According to Weick (1979, 1996), who rejects the individualistic bias in many psychological conceptions of learning, organizations are characterized by ambiguity and a search for meaning. Facts and events do not carry any automatic meaning; they are perceived subjectively, and sense-making is problematic. A closely related view of organizations is that they are shared agreements among participants attempting to make sense of their situations (Duncan & Weiss, 1979).

Accordingly, what constitutes successful action often is in dispute, particularly when the organization experiences a change in leadership and when the organization is not tightly integrated (Levitt & March, 1996, pp.522-23). The loose-coupling of technical requirements and authority structures within many organizations only aggravates this sense-making. As one moves down the chain of command, or away from the core decision makers, interpretive problems multiply, since work contexts and organizational subcultures vary and shape perceptions of actors. These theorists, often working from the social learning assumptions discussed previously, see learning, both intentional and incidental, as emerging from opportunities to practice interpretation through discussion and trial-and-error activities. Daft and Huber (1987, p.13, quoted in Cousins, 1996, p. 621) and others argue that both perspectives have validity, and both kinds of learning are needed. Organizational learning capacity entails the capacity to increase the volume of data produced by the organization, and the capacity to reduce equivocality.

Knowledge as description or prescriptions for improvement

What is the best way to accumulate knowledge of OL? Theory in this field, as elsewhere, tends to fall into two groups, descriptive research and intervention research (Moingeon & Edmondson, 1996). Descriptive research tends to focus on learning as it actually occurs, not how it operates optimally to advance organizational performance. As Moingeon and Edmondson point out, this perspective is informed by behavioral theories of the firm and from theories of social construction. Learning occurs, whether intentional or not. It is embedded in routines, whose logic is appropriateness or legitimacy rather than consequences or intent (Levitt & March, 1988, p. 320). Schein's (1990) conception of organizational culture is a kind of learning because it is a learned

product of group experience, whose strength is shaped by the convictions of its founders, the organization's stability, and past learning experiences (Schein, 1990). Several kinds of learning occur naturally within organizations--knowledge acquisition, habit or skill learning, and emotional conditioning (such as fear of making a mistake).

Weick's conception of organizations as interpretive systems is a descriptive model where the unit of analysis shifts from the individual to the organization, as is Levitt and March's attention to competency traps. Like the work of institutional theorists, these perspectives stress how behavior is shaped by the confluence of socialization, professionalization, imitation, and education. This incidental, organic view of learning as naturally occurring emphasizes its negative features for organizational well-being.

Much of the research reviewed here, however, falls into the intervention mode. Concepts which distinguish between lower and higher levels of learning are examples (single- versus double-loop learning, learning "how" versus learning "why", and so on). These interventionist approaches explore how strategies of intelligent participation can improve individuals' cognitive maps. Individuals gain awareness of personal causal responsibility and interpersonal skills, thereby raising organizational capacity. The field of system dynamics explores how these cognitive features interact with complex system dynamics to produce learning dilemmas. In some of the theories, as stated earlier, there must be actual changes in behavior, not simply greater awareness of causes and personal responsibility.

Some interventionist research focuses on the organization as the unit of analysis. Resistance to change and strategies for creating flexible, responsive organizations are important themes. An example in the manufacturing sector is "just-in-time" production systems (Hayes et. al, 1988). Strategies also include providing more authority, responsibility, and relevant information to autonomous work groups, institutionalizing "people first" assumptions, and encouraging experimentation at the local site. This strategy, in other words, includes attention to investing in the human resource needs of individuals in the organization. All of these strategies are seen as increasing capacity for organizational learning.

* * *

As we move from this overview of the OL literature to how OL is treated in the schooling literature, it is worth underscoring several points. First, there is no consensus in the broader literature on how organization learning is defined, the unit of analysis to which it should be directed, whether it is naturally occurring or can be maximized through intentional strategies, and other important issues. The literature is best seen as a loosely-coupled set of concepts, propositions, and strategies carrying some central tendencies. These shared core elements are perhaps more unitary in what they reject than clear about what they should embrace, a not uncommon state of affairs when old theories prove inadequate and new ones are tested as rivals. OL theorists reject machine bureaucracy as an adequate paradigm for addressing current social and economic realities, either as a means of motivating and creating a skilled workforce or for creating the kinds of productive and responsive organizations which are required. A key element of this old machine model, even with its added human relations components, is hierarchy. Hierarchy as a structural and authoritative requirement has been replaced by collaboration, networks, and related concepts.

Closed, insular, and autonomous systems are now seen as impediments to environmental responsiveness; attention to the environment requires a range of individual and group strategies which are fundamentally different in an open system from the structures, values, and norms essential to a closed system. Permanence and stability are no longer viewed as assets in organizational design. Employees are viewed as human resources whose development is key to organizational performance, regardless of their specific role, responsibility, or level of remuneration. Information plays a more central role than it did in the models of organization inherited from Taylor and Weber; how to acquire this information, how to distribute it, how to interpret it, and how to retain it (Huber, 1996) all become central problems to which organizational design must attend. Despite the differences within the OL literature then, its theorists seem clearly together on one central premise: OL requires more than changes at the margins of the old organizational order, involving strategies of accommodation. Such an approach would prove to be as inadequate as the old human relations model grafted onto the machine model decades ago. The magnitude of changes required for productive organizational learning to occur, both for individuals and for the organization writ-large, are producing not a series of tremors upon the organizational landscape but instead shifts of seismic proportions. It is useful to

bear this in mind as we turn to the OL literature on schooling.

LEARNING ORGANIZATIONS IN SCHOOL SETTINGS

The following section reviews organizational learning in schools. Because this literature--or more correctly, this cluster of loosely-related literatures--is quite different from the research on LOs in other settings, we have chosen to organize this section differently. We shall begin with individual perspectives of learning, then move to perspectives on collective learning. As we will make clear, these boundaries are somewhat permeable, but they do represent different sub-literatures and in some cases different authors. These different points of departure have important implications for how to interpret LOs and our strategies for creating and sustaining them. Third, we turn to a discussion of the contextual factors affecting learning communities in schools, namely, the policy context and changing leadership requirements. As we move through these subsections, we shall draw the readers' attention where appropriate to parallels with the LO literature outside schools, or gaps between the two. In the conclusion, we will synthesize the major themes in the LO literature as it applies to schools. We also will discuss points of disagreement, gaps in the knowledge base, and issues requiring further investigation.

Perspectives On Individual Learning of Students

Many political, social, and economic elements have contributed to changes in and greater attention to expectations for student learning. The changing conceptions of student learning have profound implications for how we teach, how we prepare educators, and how we structure schools for learning. In this section we will provide a broad overview of the elements responsible for changing views of student learning.

One set of perspectives on student learning comes from the business world. As economies become more and more linked to global forces and competition, businesses increasingly feel the need to expand their capacity to respond to changes and respond to them quickly and efficiently. There is an ever increasing need for organizations to strengthen their abilities to recognize external signals; analyze expanding volumes of information on their trade, industry, or profession; approach problems more systematically and conceptually; and challenge widely held assumptions or "mental models" (Mabey, 1994; Schön, 1979; Senge, 1990a, p. 174). Businesses are, therefore, putting pressure on

schools to produce students who as future employees will enable them to remain competitive and keep the nation's companies in the global forefront. Business leaders argue that students should perform at high levels on standardized and performance-based tests and should rank high in international comparisons. This human capital view of education holds that America's schools can best serve the American people this way, since our economic strength is in everyone's best interest. Companies and corporations have played a role, therefore, in driving education reforms that purportedly will safeguard the national interests.

New ideas about the organization of the business environment have emerged. Schools are asked to provide workers who can function in the new business environment. In part, organizations have drawn from organizational learning theory. No longer do businesses want simply compliant workers, so the rhetoric goes, to perform routine skills in factory assembly lines. Today's businesses are said to want workers who can participate effectively in decision-making circles, who can work productively in teams, who have the capacity to reframe problems, who can anticipate customer needs as environmental demands change, and who can use their individual knowledge to enhance that of the organization.

Changes in the structure of society also play a role in the changing expectations for our students and schools. As family and community structures have weakened, many believe that schools need to provide the community support previously provided by these societal structures. Inner cities are especially needy of support, with large populations of poor and minority children who historically have been ill-served by our current schools. As a result, urban schools in particular are looking at their role in fostering greater family and community participation. They also face the challenge of coordinating their efforts with other community and governmental resources in fulfilling the social, emotional, and support needs of the students, staff, and families (Cibulka & Kritek, 1996). Research suggests that an important element in teaching urban students is attending to their basic needs of belonging and feeling cared for (e.g., see Wehlage, Rutter, Smith, Lesko & Fernandez, 1989a, 1989b).

Theoretical developments in education also have contributed to a changing view of what students should know and how students should learn it **(Bransford, 1999)**. We have developed a

more complex view about how students learn and the conditions and resources that support such learning. First, let us explore theoretical developments in student learning.

Developmental Aspects of Learning : It has long been understood that children are born with an innate capacity to learn from their environment and caregivers. Infants and young children engage in an interactive developmental process by which they begin to construct and organize an understanding of their environment. More recently researchers have come to understand how this early cognition is related to learning. Some findings include 1) children are predisposed to learn particularly in areas of language and causality 2) children have the ability to reason based upon their prior experience and current knowledge base 3) problem solving and question asking is an innate characteristic 4) persistence associated with problem solving is the result of intrinsic motivation 5) metacognition, awareness of one's own learning capabilities, occurs early and is associated with children's error detection and 6) Early learning is necessarily mediated and supported by caregivers and the environment. These and other findings have led researchers to conclude that the organization of the brain is dependent on experience and that cognitive development is not solely driven by biology. It is the reciprocal nature of children's relationship with their environment that selectively promotes, regulates, and structures young children's expanding concepts of their environment. This suggests that attention to the qualitative aspects of learning opportunities is essential to ensure children's ability to infer and categorize information.

Learning Transfer: Traditional approaches to instruction, learning, and assessment have focused on rote memorization of facts and concepts. New research on learning suggests that more important is student's ability to transfer what they have learned in one context to a new situation as well as the ability to assess whether one's prior knowledge is useful for meaning making in the current situation. Current findings suggest that an individual's ability to transfer what they have learned to new contexts depends on 1) the initial level of understanding of a subject 2) the ability to seek feedback and evaluate their own learning strategies and understanding of the subject matter, 3) the development of themes and overarching concepts rather than mastery of facts, 4) the ability to struggle with concepts in multiple contexts, 5) the development of understanding under which conditions a certain knowledge base is applicable, 6) the student's level of understanding of initial

concepts, and 7) the identification of misconceptions and the subsequent development of context appropriate conceptions. Research suggests that attention to these aspects of learning transfer are necessary to better prepare students to become flexible, adaptive, and creative problem solvers of the future.

Novice, Competent, and Expert Learners : Currently researchers distinguish between novice, competent and expert learners on the basis of the learners ability recognize meaningful patterns of information, utilize core concepts, selectively retrieve relevant information, and monitor ones approach to problem solving when faced with a novel situations. Five factors associated with expert learner competence are 1) an awareness of relevant patterns of information, 2) a deep understanding of subject matter, 3) the ability to associate knowledge with applicable contexts rather than hold them as discrete facts 4) flexible and fluent knowledge retrieval, and 5) flexibility when approaching new situations. The research suggests that by building on learners extant knowledge, helping students engage deeply with material, correcting learners misconceptions, and assisting learners to engage with others during the learning process teachers and schools can do much to develop expert learner capabilities in all children.

This knowledge about development, knowledge transfer, and levels of learner comtetence has implications for teacher learning, as we shall see in a later section. Traditionally, the teaching-learning process has been characterized by teachers as transmitters of knowledge, didactic instruction, and a linear progression of skills. Alternative conceptions of learning have shifted to a sociocultural view of the teaching process and a more cooperative view of learning among teachers and students (Chapman, 1996). Research frequently includes a view of knowledge acquisition as a matter of active participation in the social process of knowledge construction; the cultural connotations that students develop from their experience of the artifacts of schooling (books, videos, etc.); and acquisition of knowledge and dispositions including how to get along with others, how to collaboratively solve problems, when to be assertive, learning how to learn with others, and participating in and capitalizing upon elements of the group (Salomon & Perkins, 1998). Tharp & Gallimore (1988) build upon Vygotsky's work to create a theory of education that includes connecting new ideas with students' previous experiences and conceptions. A student, in their

theory, will learn best when working in their "zone of proximal development," an area that is beyond the individual's capabilities but attainable when working with others. Cobb, Wood, Yackel (1993) begin with a cognitive constructivist perspective to analyze individual children's learning in a mathematics classroom, but also reach conclusions consistent with Vygotsky. They conclude that a reflexive relationship between individual and social learning exists for both teachers' pedagogical development and students' mathematical development. This and similar literature addresses the interaction between *how* students learn and *what* students should learn. Promoting in-depth learning in all children not only requires attention to the developmental aspects of learning, facilitating learning transfer, expert learner development and socially constructed knowledge, it requires concomitant attention to environmental conditions associated with student learning (Bransford, 1999) What follows is a brief overview of current findings about the role of expert teachers, technology, and assessment in creating conditions for higher order thinking skills in children.

Expert Teachers : Current research suggests that in-depth learning is associated with specific pedagogical approaches utilized by expert teachers to create learning environments, which make use of technology, and assessment to support learning. Until late it has been assumed that a single approach to instruction was sufficient to promote and sustain student learning. New studies have revealed that teachers should posses 1) expertise in subject content as well as in instructional practices, 2) knowledge of basic principles of the discipline as well as appropriate pedagogical approaches, and 3) an understanding of the effect of culture and individual traits of learners, and 4) an understanding of children's cognitive development. Additionally, the research suggests that teachers are learners and the previously describes principles of learning applies to teachers. Given the role of life long learner, teacher's professional development plans should not be based on an "updating" model of learning but rather on developing and enhancing in-depth content and instructional knowledge.

Assessment : Currently much assessment is focused on measuring what facts and bits of information students have memorized and are able to retrieve. New conceptions of thinking and learning suggest that on-going assessment and feedback is an essential feature of instructional

approaches aimed at promoting the development of higher-order thinking skills. In short, meaningful assessments reveal not only levels of content mastery but also the quality, depth, and breadth of student mastery. Research suggests that assessment intended to facilitate learning and understanding should be on-going, embedded in instructional practices, and provide relevant information to teachers, students, and parents about what and how content is being learned.

In addition to evolving understandings of the relationship between, development, the social construction of knowledge, and the effects that environment has on learning, conceptions of student learning have also been influenced by work within specific disciplines. Again, this research in specific disciplines has emphasized the link between *what* students learn and *how* students learn it. Ball (1993), for example, explores developing individual students' mathematical knowledge and abilities through classroom communities. The field of mathematics has been greatly influenced by the *Professional Standards For Teaching Mathematics* published by National Council of Teachers of Mathematics (1991). These professional standards are based on the assumption that "what students learn is fundamentally connected with how they learn it" (p. 21). Good mathematics teaching, it goes on to say, is based on understandings of how diverse students learn and come to understand mathematics. A teacher's role is to structure activities that will engage students with diverse backgrounds and experiences, enabling all students to develop their mathematical power.

Standards in other content areas, such as science and history (National Research Council, 1996; National Center for History in the Schools, 1996), similarly reflect the research on student learning by attending to students' backgrounds and experiences and by recognizing the relationship between how students experience content and what they learn.

Research on the teaching of literacy has highlighted collaboration, dialogue, and processes. Whole language and process writing methods are results of the changing conceptions of teaching literacy. Calkins and Harwayne (1991) and Short (1990) have both written about building community in literacy learning.

More research has also attended to differences among learners--not only learning styles, but also the differences in culture, gender, and experiences. This has drawn attention to the need for a repertoire of instructional strategies in classrooms that take into account the social construction of

knowledge and increased groupwork. Given language as a socially agreed upon system of rules and norms and meanings, those teaching literacy in schools have had to address the needs for students to construct meaning *in conjunction* with one's classmates and teachers as opposed to being told and "filled" with knowledge. Process writing and whole language programs stem from this view. Similar discourse can be found in discussions of manipulatives in mathematics and problem solving in science (Evans-Stout, 1998).

Along with the developments in teaching and learning content areas, the use of standards in teaching and learning has gained notice. Many states have set and implemented student performance standards to set certain expectations for student achievement. The hypothesis that these standards will increase student learning is largely untested, with some exceptions (Guthrie, Schafer, Afflerbach, and Almasi, 1994; Firestone, Mayrowetz, Fairman, 1998), but has much support (e.g., CPRE, 1996; Firestone, Bader, Massel & Rosenblum, 1992; Education Week, 1998).

Student standards have also meant changes for teachers. In order for students to meet these standards, teachers are expected to construct their classroom and activities to enable the students to succeed. Additionally, standards for teachers have been proposed by such organizations as the National Council of Mathematics and the National Board for Professional Teaching Standards. Many European and Asian countries utilize standards in education, developed by educators working in concert with the governing board. In the United States, educators have less experience working with standards despite the fact that other professions (e.g. architects, accountants, engineers, and doctors) have long used standards to guide their work, training, and licensing.

Standards are viewed by some as a method of setting guideposts for curriculum, performance assessments, teacher quality, and professional development (Darling-Hammond & Wise, 1985; Education Commission of the States, 1996; National Council of Teachers of Mathematics, 1991; National Commission on Teaching and America's Future, 1996; National Council for Accreditation of Teacher Education, 1987). In this view, policies and standards are used to focus and mobilize resources (CPRE, 1996, Public Policy and School Reform). Such policies and standards would be developed in collaboration with educators, to aid in the development of supports rather than constraints limiting teachers' ability to respond to student needs. These standards would serve as

accountability measures and prevent schools from "falling through the cracks" (For a discussion, see Darling-Hammond, 1997).

Some view standards as a constraint to what can be taught. Frequently in this view, standards are attached to sanctions if a student or teacher does not perform up to the stated level. This view holds that standards limit the discretion of educators, tying them to only the designated curriculum or activities and not allowing any adaptations according to specific student needs or interests. Content and performance standards enable the public to control, influence, regulate, and assess what students know, don't know and should be expected to know, as opposed to allowing educators to be solely responsible for these decision. Additionally, standards could result in teaching all students to meet the minimums, as opposed to ensuring that all students reach a minimum but allowing capable students to exceed these minimum competencies (e.g., see McNeil, 1988b,1988c).

Standards also apply to another change in conceptions of student learning. Beliefs about what students can and cannot achieve based on gender, socioeconomic status, ethnicity influence students' access to quality education. Research now suggests that all students can learn when under proper conditions. For example, Peterson (1989) reported that remedial students placed in an accelerated pre-algebra program learned more than their peers placed in remedial math programs. Moreover, those students placed in remedial programs lost ground in comparing them to "regular" students, whereas some of the remedial students in the accelerated program were able to lose their remedial designation. This research, and other similar studies, have given rise to programs (for example, Accelerated Schools and Reading Recovery) that challenge the current structures of schools and seek to change the way in which we teach students, in addition to the what.

Setting high standards for all students may highlight the vast inequities in our current school system and create pressure to eliminate those inequities. Tracking systems allow students unequal access to information and resources. Inadequate funding limits access to the better trained teachers and to adequate resources. Whereas the idea of equal access to quality education has always been stated as a foundation of public education, schools have been structured so that all students can learn but not all students learn the same material or at the same rate.

The literature on student learning, both content and method, is vast. This review does not

seek to be comprehensive in its treatment of these topics. We cite this body of literature on student learning to show how it has given rise to a reevaluation of how schools should be restructured and how teaching must change. The changing conception of student learning, in other words, has profound implications for how teachers acquire knowledge, transmit knowledge to students, and relate to parents and others in the community, as well as how schools structure teachers' work.

Perspectives On Individual Learning Of Teachers

There is much literature on teacher learning centering on the complexity of changing teachers' practices, particularly in the context of reform-oriented pedagogy. Creating opportunities for teachers and other adults in the educational system to learn new practices presents an enormous challenge and requires a reconceptualization of the ways in which teachers come to learn new ideas. This challenge involves new ways of thinking about professional development.

It is important to point out some of the historical antecedents that have led to the calls for reform in professional development and teacher learning. A behavioral approach to learning has dominated the past 20 years, influenced strongly by the notion of teaching as a craft from the 1960's. Pragmatic concerns of teachers such as constraints on time, funding sources, and/or local or district policies have often resulted in a plethora of short term workshops and cookbook approaches which have ignored or under-emphasized the complexities of teaching and conceptions of practice and professionalism. Some researchers suggest that theory from other disciplines, such as adult learning theory, has been largely unconsidered in the design and delivery of professional development for teachers (Guskey, 1995). The effect has been that generally teachers do not have a positive view of professional development and do not necessarily view it as an aid or useful tool.

Current research on professional development suggests that individual workshops aimed at transmitting technical knowledge to teachers are ineffective (Hamilton & Richardson, 1995; Lieberman & Miller, 1991). Instead, it is argued that professional development must be long-term inquiry processes with a collective focus on school goals and student learning. The domain of knowledge included in professional development experiences, therefore, must include collaboration, change processes, and school culture as well as teaching and learning (Fullan, 1995). On learning to teach new innovations, however, teachers engage in such ideas, knowledge and skills through the

lenses of their experiences of practice. They bring a host of beliefs, ideas and values about teaching, about assessment, about subject-matter knowledge, and about students (See Carter, 1990; Feiman-Nemser, 1983; Feiman-Nemser & Floden, 1980, 1986; Zeichner & Gore, 1990).

Much of the professional development literature still focuses on the individual teacher. The broad diverse literature in education includes what teachers should know as well as strategies of how to achieve this knowledge base. We will address these in sequence, first exploring the literature on theoretical views of teacher learning, and then on the needs of individual teachers in learning content knowledge, learning pedagogical skills, and changing beliefs and attitudes. We will then look at strategies the literature suggests for addressing individual learning.

Theoretical Perspectives on Teacher Learning : Bransford et al. (1999) suggest that what is known about student learning also applies to teacher learning. For teachers, like students, promoting in-depth not only requires attending to the developmental aspects of learning, facilitating learning transfer, developing expert learner skills, it requires concomitant attention to social conditions associated with student learning. Much attention has been given to the social aspects of teacher learning. In this view of learners, teachers included, an individual participates in constructing knowledge with others in a social and culturally situated context. Salomon and Perkins (1998, p. 8) cite Wertsch in summarizing the basic assumption of this view:

> Human mental functioning is inherently situated in social interactional, cultural, institutional, and historical context. Such a tenet contrasts with approaches that assume, implicitly or explicitly, that it is possible to examine mental processes such as thinking or memory independently of the sociocultural setting in which individuals and groups function (Wertsch, 1991, p. 86).

This view of socially constructed learning focuses upon what the individual learns; however, it recognizes that what and how the individual learns is intimately tied to the context in which the individual is situated. This differs from the research on social learning that focuses on what the collective entity learns (see sections on "Organizations in Non-School Settings" and "Perspectives on Collective Learning and Culture in Schools").

O'Connor (1998) develops this notion of socially constructed learning by describing the three main views of socially constructed learning found in the literature. One centers on the idea that the collective constructs the reality or beliefs for the individuals. Examples of this in education literature

include the work on social reproduction by Apple, Freire, and Giroux. A second view of socially constructed learning focuses on how individuals learn, proposing that one can only acquire knowledge through one's own construction. In this view the social environment is both a source of motivation and the generator of what has to be learned socially. The third category of socially constructed literature is based upon the dynamic interaction of individual and collective learning. This view centers on the sociocultural-historical view of Vygotsky.

In addition to the social aspects of teacher learning, some professional development literature draws a connection between the teaching-learning process and the teacher's knowledge gained from his or her own day-to-day experiences. This literature points to a holistic view of teaching and teachers' learning that is rooted in teachers' own craft knowledge (Tillema & Imants, 1995; Lieberman, 1995). To provide teachers with effective and valuable professional development opportunities means to structure the opportunities in accordance with how they learn and how they make sense of the new experiences and practices. It requires an understanding of the process of transformation of ideas—the connection between old and new. On the one hand, this means that they need to be guided into an exploration of their own experiences of teachers as learners and to examine their deeply rooted beliefs that emerge from their experiences (Ball, 1988; Zeichner & Liston, 1987). On the other, teachers need to encounter the underlying beliefs and ideas of the new ways of teaching in ways that are comprehensible to teachers yet challenging to their practice (Ball, 1990). Stein and Brown (1997) view teacher learning as a "transformation of participation" (p. 160). For teachers to best learn, they must have an understanding of the overall purpose of the activity, participate despite various levels of expertise, and be involved in a conversational discourse as opposed to didactic instruction.

The literature on social learning of teachers parallels that of the social learning of students. Differences come to play, however, in that the professional development of teachers must attend to more than just how teachers learn best. The social learning element of professional development must also apply to their content area knowledge, pedagogical skills, their attitudes towards students, and their beliefs about themselves as professionals. Thus, there are alternative approaches to teacher learning, such as opportunities to talk about subject matter, to talk about students and learning, and to

talk about teaching (Wilson and Berne, 1999). We look next at literature addressing the first of the above list, namely, teachers' knowledge in content areas.

Teachers as Content Specialists : As mentioned earlier, knowledge regarding how students best learn content in the various disciplines has evolved. More attention is devoted to the social aspects of student learning. This has implications for teachers, as well. Building the kind of classroom communities that support deep subject matter understanding on the part of students is complex and difficult work. What would it take for teachers to learn about practices that promote such classroom communities? In part, teachers must themselves have deep disciplinary understandings (Ball, 1993; Lampert, 1985; Schifter & Fosnot, 1993; Shulman, 1987).

Some research speaks to the role of professional standards in assuring the content knowledge of teachers. For example, Darling-Hammond (1997) promotes a three-pronged strategy of standards to help ensure competent educators. Standards of minimum competencies for teachers would include a thorough content knowledge, as well as testing for strong foundations in pedagogical content knowledge, understanding of child development, the ability to recognize differences among students based on gender, cultural or family backgrounds, knowledge of motivation, and student assessment strategies. Shulman (1987) recommends that any standards for teacher certification be legitimized threefold:

> they must be closely tied to the findings of scholarship in the academic disciplines that form the curriculum (such as English, physics, and history) as well as those that serve as foundations for the process of education (such as psychology, sociology, or philosophy); they must possess intuitive credibility (or "face validity") in the opinions of the professional community in whose interests they have been designed; and they must relate to the appropriate normative conceptions of teaching and teacher education (p. 5).

In addition to these teacher standards, Darling-Hammond (1997) suggests that an effective system of schooling needs to have standards for teacher training institutions as well as student performance standards. These standards would help prevent schools and students from "falling between the cracks," more than dictate what schools and teachers should be doing.

Implementation of such teaching standards will warrant attention, however. Darling-Hammond and Wise (1985) surveyed 43 teachers in the Mid-Atlantic states as to their views toward specific types of policies. Forty one percent opposed competency-based standards for teachers, more for the reason that it would be too difficult to specify all the skills a teacher should know than

because of the concept in general. Teachers were more supportive of testing content knowledge. In general, the teachers viewed the various standards as a method to prevent gross errors or inadequacies rather than ensuring quality.

Changing and Improving Pedagogical Skills : The vision underlying the nation's reform agenda requires most teachers to reconceptualize their roles, to construct new classroom practices and expectations, and to teach in ways they have never previously taught (Little, 1996; McLaughlin & Oberman, 1996; McLaughlin & Talbert, 1993; Nelson & Hammerman, 1995; Prawat, 1989). The success of this reform agenda depends on teachers' engagement with the serious and difficult tasks of learning the skills, knowledge and dispositions assumed by new visions of practice. The success also frequently involves the tasks of unlearning the practices with which teachers have become accustomed (Bryk & Thum, 1989; Darling-Hammond & McLaughlin, 1995; McLaughlin & Oberman, 1996; McLaughlin & Talbert, 1993; Louis & Smith, 1992).

Research in content areas emphasizes the need for a change in the pedagogical skills of teachers. For example, literature on mathematics pedagogy describes communities of learners which develop each child's mathematical abilities through the use of groups (Ball, 1993). Such classrooms facilitate students coming to know the content and to know how to learn from each other. Ball (1993), Lampert (1985), and Schifter and Fosnot (1993), among others, have pointed to the complexities of creating classrooms that are organized to engage students in authentic tasks and are guided by teachers with deep disciplinary understandings.

Calkins and Harwayne (1991) and Short (1990) similarly describe the use of communities in developing literacy in students. Short describes two classrooms that highlight the use of collaboration and dialogue:

> Instead of sitting and listening as their teachers pass on knowledge to them, they are actively involved in thinking and learning with their teachers and other class members. Their classrooms are communities where learners are committed, not just working side by side, but to thinking together to build new ideas beyond what could be accomplished individually (p. 34).

These classroom communities differ drastically from the traditional classroom model depicted by a teacher lecturing in the front of a classroom of students in straight rows of desks. Changing to a new model of teaching requires developing different pedagogical skills in our teachers. According to

Short (1990), these teachers must be able to create classroom communities in which learners (1) come to know each other; (2) value what each has to offer; (3) focus on problem solving and inquiry; (4) share responsibility and control; (5) learn through action, reflection and demonstration; and (6) establish a learning atmosphere that is predictable yet full of real choices (p. 35).

The pedagogical knowledge of teachers is particularly unique in that it "distinguish[es] the understanding of a content specialist from that of the pedagogue" (Shulman, 1987, p. 8). Changing the instructional strategies of teachers is a difficult and complex task. Research is just beginning to answer questions on how effective various standards in education have been in promoting such changes. Firestone, Mayrowetz, and Fairman (1998) suggest that performance-based assessment produces much activity but only a minimal changes in basic instructional strategies. The status quo is difficult to overcome.

Teachers' Attitudes toward Students and Student Learning : Researchers posit a wide range of beliefs, knowledge and practices that are deemed central in promoting student success, many of which may not be part of the traditional teachers' repertoire or mindset (McLaughlin & Oberman, 1996). Louis and Smith (1992) argue that important to the success of students is teachers' engagement in students' learning. This focus on students was evidenced in teachers subjugating their personal content interests and participating in student-centered curriculum decisions. Wehlage et al (1989a, 1989b) argues that "at risk" students are more likely to succeed when they feel the teachers care for them and are interested in their well being. This type of research suggests that an important role for teachers is that of a coach, friend, or mentor to the students.

In this vein, Eraut (1995) proposes a three part model of the roles of teachers. First, the professional aspect of the role of teacher includes processes for acquiring information about students, routinized actions and skilled behavior, planing, decision-making, problem solving and meta-processes such as assessing, evaluating and controlling. The second role is that of a professional school involving staff relations and professional development that focuses on serving the needs of the students and the public. The third part of this model engages the teachers in a framework for determining the clients' needs, necessitating a moral commitment to serving the interests of students.

Some research has linked the level of commitment to the match between the background characteristics of the student and that of the teacher. For example, Alexander, Entwisle, and Thompson (1987) found that low-status students experience the greatest difficulties in classrooms with teachers of high-status backgrounds. This research is not conclusive, however. For example, Natriello and Dornbusch (1983) found that more school-related characteristics, such as student achievement records and social behavior record, have a greater impact on teachers' behaviors towards their students than do the students' gender or ethnicity.

Teachers Beliefs about their Professional Growth : Other research attends to the level of commitment the teacher has to his or her own growth and professional development. Knapp (1995) argues that teachers must desire and search out professional development. Until then, the experiences will not accumulate enough to influence changes in their practice. Similarly, Little (1990) highlights the importance of teachers' motivation. Motivation to work and motivation to learn are viewed as closely linked. Therefore, the working conditions of teachers are central to teachers improving their teaching, thereby improving student achievement.

The report of the National Foundation for Improvement of Education (1996) recommends that teachers assume responsibility for their own professional development, with schools and administrators creating workplaces to encourage such growth. In an ethnographic study of 105 teachers and 14 administrators, Little (1982) found that more successful schools showed more commitment to continuous improvement by individual faculty than less successful schools. Teachers in these more successful schools valued continuous improvement and experimentation, and they demonstrated a greater number and variety of professional interactions with colleagues and administrators.

Guskey (1995) contends that teacher preparation alone is insufficient for improving teaching. He recognizes that teachers need to work individually and in teams to support their ongoing development. However, as Wiske, Levinson, Schlichtman, and Stroup (1992) argue, teachers need the support of their colleagues as they learn about new ideas of practice. They argue that teachers often lack the psychological support they need to persist. Wilson (1990) also advises that teachers need assistance that is supportive and nurturing as they develop ideas about teaching.

Some of this support and assistance to the professional development of individual teachers is evident in the growing number of action research case studies in the literature. These groups of teachers are actively engaged in their own professional development and serve as a support group for each other. In one example, Allen, Cary and Delgado (1995) document their transformation into learners over the course of their action research. McCaleb (1994) similarly documents the dedication to teaching and learning literacy of a group of teacher-researchers.

Amidst these many discussions about the knowledge and commitments that teachers need in order to promote students' success, there are suggestions from the research that through building community, student achievement has been found to improve directly (Louis, Kruse & Marks, 1996). Specifically, these researchers found that a professional community within a school promoted an emphasis on the students' learning, provided technical support for innovation that teaching requires, and sustained teachers through a support system. When teachers as individuals feel accountable for the students' achievement, students learn more, especially students from less advantaged backgrounds (Lee & Smith, 1996; Little, 1996; Wehlage et al, 1989a, 1989b).

Strategies for Affecting Change in Teachers' Knowledge, Behaviors, and Beliefs : While some literature has discussed the requisite knowledge and skill base of teachers, the professional development literature has suggested a range of more or less specific strategies to affect changes in teachers' knowledge, behaviors, and beliefs.

Professional development traditionally has consisted of one-shot workshops that lacked continuity or connection to the larger goals of the school or the teachers. These have proven ineffective in changing teachers' classroom practices. Literature on professional development for teachers, however, suggests a collection of conditions and practices that do increase the likelihood of change in teachers' knowledge, behaviors, and beliefs. Some literature on affecting change in teachers knowledge, behaviors, and beliefs tends to look at teachers as a collective entity and includes change strategies that are directed toward the collective. This will be attended to in a later section. The literature that looks at how to affect change in individual teachers will be attended to in this section. It can be categorized in three main strategies.

First, some strategies attend to the *sequencing of knowledge acquisition* by teachers in order to permit mastery on their part. For example, the National Center for Research on Teacher Education describes four conditions that seem necessary in efforts to provide opportunities for teachers to adopt innovative practices. First, teachers need an opportunity to investigate why new practices may be better than some conventional approaches. Second, they must be given opportunities to be provided with images of such practices. Third, they should be provided opportunities to learn the examples of such practices. Fourth, they need school-based guidance and support in learning to teach new practices (NCRTE, 1991, p. 68).

A second category of the professional development literature embodies *opportunities for participatory learning* . This literature includes action research projects such as Allen, Cary, & Delgado (1995) and McCaleb (1994) in which groups of teachers take the responsibility for their own learning and jointly pursue and area they perceive as a need. Lieberman (1995) encourages a rethinking of professional development to include more than just the more structured and formal forms of professional development. Authentic opportunities to learn from and with colleagues inside the school may be equally as effective professional development as those workshops, conferences, and classes offered outside of the school. A related literature of relevance to this goal discusses teachers' participation in the governance of the school (e.g. Smylie, Lazarus & Brownlee-Conyers, 1996). These literatures, however, more accurately attend to changing of the culture of the school, and therefore will be discussed more fully in the following section.

A third category of the professional development literature is that which looks at the *individual needs of the teacher* . Professional development is most effective when it is tailored to the needs of the individual. Huberman (1995), for example, claims that current professional development is overly centered on school needs and does not adequately attend to the needs of the individual teachers. By doing so, it underestimates the difficulties of instructional change. He suggests a cyclical view of professional development that is built on the idea that change will be complex, novel, ambiguous, contradictory, and conflicting—ideal conditions for individual learning.

Much recent research has tried to link teacher professional development and workplace reform with theories of adult development and learning, which emphasizes more direct involvement

and participation of mature adults in different life and professional states, in the diagnosis and development of learning experiences that are relevant, realistic and problem-centered (Knowles, 1973, 1970). This connection has historically been absent. Consequently, this connection holds implications for professional development. This research also argues that professional development activities should be compatible with teachers' stages in their careers, their lives, and their personal development (Fessler, 1995; Guskey, 1995; Huberman, 1995; Smylie, 1995; Tillema & Imants, 1995).

Increasing consideration in research is being given to the conception of continual learning or life-long professional learning (Meverach 1995, p.154 discusses the work of Dwyer, Ringstaff & Sandholtz, 1991; Guskey, 1991; and Hall, Louchs, Rutherford, & Newlove, 1995). Meverach (1995) applies a U-curve model of professional growth and conceptual change to explain the "negative side of decline in performance and attitudes" (p. 151) over the course of a teacher's career, and the "positive side of overcoming the difficulty in reconstructing teacher pedagogical content knowledge" (p. 151). Research by Fessler (1995) uses a Teacher Career Cycle Model to align and broaden the notion of staff development and professional growth to include concern for personal needs of teachers. Teachers' needs vary according to the stage of the teacher: preservice, induction, competency building, enthusiasm and growth, career frustration, career stability, and career wind-down. Huberman (1995) similarly applies stages in the professional cycle to the needs of teachers for particular professional development. The states are similar to those identified by Fessler, and Huberman suggests tying professional development activities to these states as guides for matching activities to individual teachers needs.

Hawley and Valli (1998) acknowledge the need to relate professional development to the needs of the individual. They go further, however, in combining the various literatures' recommendations. They propose eight characteristics that embody the recent syntheses of literature on professional development and the national calls for action (e.g., The National Governor's Association, The National Staff Development Council, US Department Of Education). Professional development including "substantial elements" (p. 15) of these design principles is more likely to affect changes in the knowledge, skills and behaviors of educators that will result in enhanced student

learning:

1. "Is driven, fundamentally, by analyses of the differences between (a) goals and standards for student learning and (b) student performance."
2. "Involves learners (e.g., teachers) in the identification of what they need to learn and, when possible, in the development of the learning opportunity and/or the process to be used."
3. "Is primarily school-based and integral to school operation."
4. "Provides learning opportunities that relate to individual needs but are, for the most part, organized around collaborative problem solving."
5. "Is continuous and on-going, involving follow-up and support for further learning—including support from sources external to the school."
6. "Incorporates evaluation of multiple sources of information on (a) outcomes for students and (b) processes that are involved in implementing the lessons learned through professional development."
7. "Provides opportunities to engage in developing a theoretical understanding of the knowledge and skills to be learned."
8. "Is integrated with a comprehensive change process that deals with the impediments to and facilitators of student learning" (Hawley & Valli, 1998, p. 15-16).

The authors report that there is much agreement that these elements can result in increased student learning. However, professional development as it currently exists in schools rarely embodies these principles.

Perspectives On Collective Learning And Culture

Much research and theory on schooling has discussed the importance of these teacher commitments to student learning and to their own professional development as requiring shared norms in a school. The staff as a collective entity must share certain beliefs about teaching and learning and must support each other in their own teaching and learning. This research deals with the culture of teaching and learning in schools, and will be treated in this section. This section will attempt to describe the literature that attends to social learning, collective learning, or organizational learning in schools, in which the organization or group, rather than individuals, is the unit of analysis.

Salomon and Perkins (1998) describe four general meanings of social learning. The first is commonly referred to as traditional instruction and can be understood as the social mediation of individual learning. The second involves individuals learning from participatory knowledge construction. This is a sociocultural view in which interactions produce joint constructions distributed to all members. The third involves the mediation through cultural artifacts (videos, textbooks, etc.) carrying the social and historical norms as they are represented to the learner. The

fourth meaning describes the learning of a team or group, the social entity *as* the learning system. Educational literature looks at all of these various concepts. The literature earlier reviewed in this paper on student and teacher learning relates to the social mediation of individual learning (instruction) and the mediation through cultural artifacts. The remaining two dimensions will be used to organize the educational literature on collective learning.

The literature varies according to whom the collective includes. Much of the literature is written from the perspective of the teachers or adults as the members of the collective that is learning. Some of it looks at the collective learning of students within a classroom or smaller group of classrooms. Little of the literature attends to the learning of a collective that includes both the adults and children in a school. To find literature that includes parents, families, community members, or social service agencies on a more regular basis, one must explore strands of literature not included here. Nonetheless, the age or role of the members of the organization does not change the essence of the material on collective learning—both represent a similar understanding. Aspects of the culture can change widely depending on the inclusiveness of the community.

The construct of culture in educational literature has roots in anthropology, psychology and sociology. It is used to describe a wide variety of organizational characteristics including but not limited to peer norms, academic expectations, norms of civility, student and teacher morale, member beliefs and values, and organizational practices and traditions. Lee, Bryk and Smith (1993) attempt to capture its broadness of scope: "Rather than implying a particular configuration of beliefs, the term *school culture* may describe any collection of values and related activities. In fact, research on school culture typically emphasizes the unique aspects of each school"(p. 209).

Participatory Knowledge Construction : Research is developing an approach to the study of learning that is more inclusive of and mindful of the cultural, social, historical, interactional, and institutional context in which the learners and the learning are situated. Whereas much of the discussion of individual learning of students and teachers recognizes this, some of the literature goes beyond just being mindful of the context and seemingly tries to blend the social and individual elements together. The collection of learners in a school jointly constructs knowledge that is shared by each member. Individuals may have disparate understandings, given that no two individuals share

the same history of experiences, but they share a joint construction and an understanding to a certain extent. This is in accordance with Salomon and Perkins' (1998) second definition of learning as participatory knowledge construction.

Cochran-Smith and Lytle (1999) advocate knowledge *of* practice. This view rejects the distinction between formal and practical knowledge. Knowledge emanates from systematic inquiries by teachers over their career span, addressing a host of topics concerning teaching, learners and learning, subject matter and curriculum, and schools and schooling. Teachers are co-constructors of knowledge, and their practice includes things done outside their classrooms, such as connections to children and their families, to community organizations, and to school-university partnerships. The authors endorse "inquiry as stance" associated with the third conception. They discuss how knowledge is generated in inquiry communities, how it relates to practice, and what teachers learn from inquiry. In this third conception of inquiry, teacher learning is more than professional development. The authors discuss the cultures of inquiry communities. Time is a critical variable in facilitating learning. The notion of inquiry as stance also makes explicit as a problem teachers' role in designing and implementing initiatives for their own learning.

Research in content areas discusses learning as participatory knowledge construction in the classroom context. These studies generally attend to aspects of culture of groups of teachers and students. Researchers in the area of literacy, Calkins and Harwayne (1991), point out the importance of considering that how and what students learn is intimately interconnected to the kind of communities that emerge in classrooms. Calkins emphasizes the need to "fill the classroom with children's lives" (1991, p. 12). Students will grow beyond one's expectations if their lives are woven into the classroom as opposed to being left at the school door. Such classroom communities are marked with caring, engagement, and respect for all.

In Short's (1990) previously described study of two Indiana classrooms, the emphasis is on students actively thinking and learning with each other and with the teachers. These classroom communities are "thinking together to build new ideas beyond what could be accomplished individually" (p. 34). One of the six key elements to a classroom community according to Short is that learners share responsibility and control. Another is that learners come to know each other and

value what each has to offer. These characteristics develop communities in which learners actively participate in the construction of knowledge, norms and values for the classroom.

Research on building a community of learners in the area of mathematics pedagogy also highlights participatory knowledge construction. Ball (1993), Lampert (1985), and Schifter and Fosnot (1993) point to the complexities of creating classrooms that are organized to collaboratively engage students in authentic tasks. Ball (1993), in describing her work as an elementary classroom teacher, sees her classroom community as a context to develop "each individual child's mathematical power *through the use* of the group" (p. 388). Here, the ways in which students come to know is interwoven through the fabric of the classroom community. This community is not only what and how individuals come to understand, it is also "about developing children's appreciation for engagement with others different from themselves." In Schwab's (1976) terms, we strive to be a learning *community*, and also to be "*learning in* community" (p. 388). Such literature has at its center a need for individual students to learn through participation in a social context.

The dominance of the culture of high school departments has also been explored. Viewed as a collective of teachers or of teachers and students, one strand of research postulates that high school teachers may be more strongly affected by (and reciprocally influence) the culture of their subject matter department than the culture of the whole school (McLaughlin, Talbert, & Bascia, 1990). Louis & Miles (1990) suggest that this added level of high schools may make them a more complex and difficult entity within which to enact changes.

Other research enlarges the defined community from the classroom or department to the students and teachers of an entire school. For example, Bryk and Driscoll (1988) identify three core concepts that define a "communal school organization."

> • a system of shared values among the members of the organization, reflected primarily in beliefs about the purposes of the institution, about what students should learn, about how adults and students should behave, and about what kinds of people students are capable of becoming;
> • a common agenda of activities designed to foster meaningful social interactions among school members and link them to the school's traditions; and
> • a distinctive pattern of social relations, embodying an ethos of caring that is visibly manifest in collegial relations among the adults of the institution and in an extended teacher role (Bryk & Driscoll, Executive Summary, p. 1).

This definition includes roles for students and adults and encompasses the entire organization, the school. Other researchers directly utilize this definition (Rowan, 1990; Caine & Caine, 1997) while others propose a similar one (Louis, Kruse, & Associates, 1995). The shared values and common agenda of activities suggest a group of individuals who jointly construct these ideas and come to share a common meaning. This is a type of socially mediated learning.

Fullan (1991) also describes a shared understanding of the purposes, rationale and processes of any school innovation as a requirement for school learning. As with the research just discussed, he has a more inclusive view of who has these shared understandings. He discusses the roles of teachers, principals, district administrators, students, parents, and the community.

Still other research singles out the faculty within a school as the collective and concentrate on the cultural attributes of this group. Little's (1982) study of more successful schools pointed out the cultural characteristics of the faculty as a group. Lieberman and Grolnick (1996) similarly emphasize the collective entity of teachers, though including the networks teachers can build among multiple schools. Again, this demonstrates teachers as individuals creating shared norms of behavior and values that become knowledge each individual shares with the whole.

Another section of the literature looks at all the people in the school, but attends to more managerial or structural type of learning. Borrowing from organizational management literature, strategies such as Quality Schools (Fitzpatrick, 1997), High Performance Learning Organizations (Castle & Estes, 1995), and Total Quality Schools (American Association of School Administrators, 1992; Schargel, 1994; Shipley & Collins, 1997; National LEADership Network Study Group on Restructuring Schools, 1993; Greenwood & Gaunt, 1994) are being implemented in some schools and districts. These strategies call for the involvement of all members of the school or organization in participative management structures and collaborative problem solving settings. Generally, these strategies have dimensions that attend to the social needs of members as well as the more technical, structural issues. These differ from other school reform discussions, however, in that they reflect the stronger emphasis from the organizational management literature on continual or life-long change. Deming's philosophy of "if it ain't broke, fix it" (Nadler et al, 1992) illustrates the shift from adapting to a change in the environment to focusing on continual learning in order to keep up with

the constant change in the environment.

The Social Entity as the Learner : With similar variety in the inclusiveness of the collective, educational literature on collective learning touches on a second approach. To discuss the shared values and beliefs, common goals, group norms of a school or organization, generally requires a discussion of the culture. To speak of the shared culture of an organization is to treat the members as one group, one whole. The whole entity possesses certain characteristics. Thus, the learner of new practices, beliefs, and knowledge is the school as a singular entity. For instance, Rosenholtz' research on teacher workplace (1991) suggests that good schools are places where teachers share common goals, colleagues help one another, teachers and students learn and grow, and teacher believe in themselves. The subject being discussed is the "good school," a singular entity.

Salomon and Perkins (1998) describe their fourth type of learning as that of the social entity. This differs from individual learning in that it is highly contextualized, and knowledge can come from reflection, grafting, feedback, and internal comparisons (e.g. one classroom teacher learning by comparing her class to that of another teacher). The learning of a collective entity includes more of the organizational routines, practices and shared history, thus differing somewhat from what individuals learn. Approaching schools as a collective entity involves an emphasis on those views that are common to all members as opposed to the more disparate views individuals may hold.

School reforms that seek to change a school's culture seek to alter the characteristics of this entity. Thus, they promote learning on the part of the collective as is consistent with Salomon and Perkins' (1998) definition. To meet the demands placed on teachers (e.g. to create strong teacher-student relationships, teach for high degrees of understanding) and change a school's culture, scholars advocate building a sense of community.

Louis (1990) develops the idea of a community of professionals as a social learning unit. Her study examines the way professional and community values of teachers affect their work life. She finds that some teachers valued being a part of a collective body whereas others valued individual autonomy. Smylie, Lazarus and Brownlee-Conyers (1996) find that a decline in individual autonomy, along with greater increases in accountability and the number of learning opportunities, tends to result in greater instructional improvement. A decrease in individual autonomy accentuates a focus

on the learning of the collective.

Lieberman (1995) also specifies the collective and its culture. In order for school reforms to work, teachers must be enabled to change practice. One way to accomplish this is to create a culture of inquiry in which professional learning is an expected, sought after, and ongoing part of teaching and school life. Spillane and Thompson (1997) stress that the capacity for learning by the school, the staff working collectively, defines the limit to which the school can support ambitious reform. In this light, supporting collective learning should be a key role of administration.

Guskey (1995) contends that as individuals, teachers need support to sustain the difficult work of teaching. The professional development of these teachers is not enough. Teachers need to work in teams to support their development. Wiske, Levinson, Schlichtman, and Stroup (1992) argue that teachers need the support of their colleagues as they learn about new ideas of practice. This support meets psychological needs, as well as preventing the fragmentation of students experiences in, for example, mathematics (Adajian, 1996). Teachers cannot develop new ideas about teaching without supportive and nurturing assistance (Wilson, 1990). Educational reforms cannot succeed without, in part, a shift toward teachers becoming collaborative professionals (Fullan, 1991).

The studies discussed have thus far generally emphasized the teachers of a school as the collective. Other research goes a step further, emphasizing that all teachers as a group of professionals need to be a community. This professional community is proposed as a strategy to support the difficult work of teachers and sustain a high degree of learning on the part of teachers, and, by extension, of students.

The success of a professional community depends on the emergence of shared goals, collaborative professional learning, and a community in which teachers define the goals (Adajian, 1996). In essence, the culture of the professional community is of utmost importance to supporting and sustaining effective teaching practices. McLaughlin and Talbert (1993) state that it is within the context of a professional community that teachers can consider the meaning of education goals in terms of classrooms, students, and content area. Teachers who had made effective changes to their practice had one thing in common—each belonged to an active professional community that encouraged and enabled them to transform practice.

Louis, Kruse and Associates (1995) compiled the characteristics of a school-based professional community, based on a blend of notions of teachers as professionals and teachers as a community. These communities hold shared norms and values relating to instruction and utilize reflective dialogue to promote learning. They advocate a deprivatization of practice, allowing a more publicly shared practice. These professional communities are also marked by a collective focus on student learning and a collaborative work environment.

Teachers' responses to today's students and to good practice are heavily mediated by the character of professional community (Darling-Hammond & McLaughlin, 1995; Lieberman & Grolnick, 1996; Louis, Kruse, & Associates, 1995). Teachers need sustained discussion of important ideas and mutual support to find practices developed elsewhere and to enhance professional community. Lieberman and Grolnick (1996) encourage teachers' involvement in networks and professional groups for learning and support.

Louis and Kruse and Associates (1995) found in a study of professional community in schools that "a shared normative and value base paired with reflective dialogue produce the most essential foundational support for professional community" (p. 206). However, research by the Center for Research on the Context of Secondary School Teaching (McLaughlin & Talbert, 1993) warns that "strong professional communities enable teachers to adapt to today's students if they are embedded in systemic reform contexts, but otherwise they promote consensus on traditional standards for teaching practices and overall professional commitment" (p. 14).

Some effects of professional community on classrooms have now been documented. Smylie, Lazarus and Brownlee-Conyers (1996) found that greater increases in accountability, the number of learning opportunities, and the decline in individual autonomy tend to result in greater instructional improvement. These factors can be elements of some professional communities. Smylie (1994) also found that positive change occurs in the classrooms of teachers who are directly involved in collective or professional initiatives, as opposed to bureaucratic initiatives.

Similarly, researchers are trying to measure the effects of professional community on student achievement. Little empirical evidence currently exists, though Louis, Kruse and Marks (1996) found that a professional community within a school promoted an emphasis on the students' learning,

provided technical support for innovation that teaching requires, and sustained teachers through a support system. When teachers feel accountable for the students' achievement, students learn more, especially students from less advantaged backgrounds (Lee & Smith, 1996; Little, 1996; Wehlage, et. al., 1989a, 1989b).

Other recent research has linked the professional community of a school with the culture of the school community. Louis and Leithwood (in press) incorporate several elements that are usually viewed singly into a single view of professional learning communities. They describe four features of the school organization that must serve to balance the "disequilibrium introduced by organizational learning" (p. 387). These include school members consistently taking collective responsibility for student learning, stable community-like characteristics (especially for the staff), an overlap of organizational learning conditions with those creating the professional community, and an image of schools as professional learning communities.

These studies commence exploration of the effects one culture, that of the professional community, has on another, that of the students in a classroom. Such relationships are intricate, with multiple interacting factors—factors that are complex enough in their own right. Such studies mark the edge of a needed strand of research into the dynamics of overlapping cultures. Research emphasizes that one must recognize that change occurs within a school context and that the culture of a school can strongly influence the kinds of changes that emerge in teaching practice (Griffin, 1983; Hamilton & Richardson, 1995; Lieberman & Miller, 1991). As McLaughlin and Talbert (1990) describe the embedded contexts of teaching, one can also view embedded (though overlapping) cultures.

In the hopes of realizing increased student achievement, it is tempting for leaders and policy makers to force a collaborative professional community. However, Fullan (1991), supported by the work of Hargreaves and Dawe (1989) and Huberman (1995), cautions against any contrived collegiality. Fullan suggests that such artificially created communities are "mechanism[s] designed to facilitate the smooth and uncritical adoption of preferred forms of action introduced and imposed by some experts from elsewhere," (p. 136) which could lead to a proliferation of unwanted contacts and consume already limited time. They suggest that the nature of true collaborative ventures is

deep, personal and enduring; they are not mounted just for specific projects or events. Huberman (1995) suggests not striving for school-wide consensus and conformity among teachers which may inhibit creativity and may result in the wrong solutions. "Instead of seeking widespread involvement in the use of particular innovations, it may be appropriate especially in larger schools, to stimulate multiple examples of collaboration among small groups of teacher inside and outside the school" (p. 136). Other research suggests that what is needed is an increase in the number and quality of colleagues, experts, and networks to which individual teachers could turn in the course of experimentation (Little, 1996; McLaughlin, 1993; Louis & Miles, 1990).

CONTEXTUAL FACTORS AFFECTING LEARNING COMMUNITIES: POLICY AND LEADERSHIP

The local context of schools is a critical variable influencing whether learning communities are possible. Some of the important features of a school's local context include school structures for collaboration (scheduling time, personnel, and funds), support for effective professional development, performance standards and expectations, the culture of classrooms and schools, the availability and access to outside networks, resources, and community services, the degree to which the school has a trusting and supportive climate, and the presence of an ethic of caring for all members of the community. Since these features have been alluded to earlier in this review, we will not repeat them here, except to remind the reader of their relevance.

In this section we will address two additional contextual features. First, we cannot ignore the potential implications and need for reconceptualizing and redesigning *leadership* at all levels. In the section on leadership, following the policy segment, we have emphasized the need for leadership to be reconceptualized at the school level. However, a similar reconceptualization of leadership needs to be explored at the district, state and other levels. Otherwise, efforts of leaders at the school-level to build learning communities may be weakened or neutralized. Indeed, beyond the local context of schools is a broader *policy environment*, the influence of which, and its relationship to learning communities, is largely unexplored. We would suggest that this relationship may be a factor in the creation and sustenance of learning communities and warrants consideration and exploration. We shall cover this policy context first, since it shapes the leadership context and requirements as well.

Importance Of The Policy Context Surrounding Schools As Learning Communities

The following section underscores the importance of the external environment as a factor to consider in the development of successful learning communities. The term *policy*, in the context of this review, is used in the broad institutional sense to refer to an array of forces—formal and informal; regulatory and voluntary; proximate; and which impinge on the schools (Cibulka, 1995). Although the external policy environment is not generally considered in the literature on schools as learning communities, we would argue that its influence may be a considerable factor in the schools ability to create and sustain learning communities.

While we recognize that there are many different forces that shape the policy environment surrounding schools, we limit our coverage to six (primary) categories—

- the role of the district,
- the role of the state,
- the role of stakeholders, e.g. families, business, community,
- the role of professional associations and credentialing institutions,
- the role of education reform networks and university partnerships, and
- the role of the federal government.

These may be conceived of as forces which are part of the policy environment surrounding schools. At the same time, some of the forces may be part of the learning community itself. The precise boundaries separating learning communities from their environments can be expected to vary, of course. A learning community might include only teachers within a school. Alternatively, it might include elements sometimes defined as part of a school's environment, such as parents and/or community organizations; local, state, regional or national reform networks; or, a network of teachers from across schools. Whatever the specific configuration, the learning community can draw upon this policy environment as a resource and incorporate some of its elements. Alternatively, that policy milieu may impose constraints as well as opportunities.

Each of these potential forces of the policy environment is addressed below. As will become apparent, however, the research on each topic as it relates to learning communities, is incomplete. No effort is made to review the entire literature in each topic.

Role of the District : Since schools are legally situated within school districts, there are myriad factors which affect the creation and sustenance of learning communities at the school level. McLaughlin and Oberman (1996), for example, argue that traditional top-down, teacher development strategies designed by the school district (or the state) are an insufficient foundation for the kinds of teacher learning which must occur. They also speak to the larger policy context which creates or impedes incentives for teachers.

Fragmentation of school district organization is an impediment to reform. Often there are multiple and even conflicting messages about instruction emanating from the district (Ball & Cohen, 1997). To the extent that districts are sources for controlling the priorities of local schools, there often is a contradiction of goals (McNeil, 1988a, 1988b). The tension is between educating students and merely controlling and processing them. For teachers, the second emphasis leads to viewing themselves as assembly workers; this in turn is associated with *defensive teaching strategies* designed to elicit student control and compliance, and resulting in minimal student achievement. The district can foster one or another of these orientations. Frequently there are elements of both operating in the school district, represented by different policies, which send confusing signals to teachers concerning what is desirable teaching and how they will be judged and held accountable.

The district shapes many of the incentives surrounding teachers as they do their work. These take the form of collective bargaining agreements, personnel policies, and other procedural requirements for innovation and experimentation. The district influences opportunities for teacher learning by its budgetary policies and whether it encourages site-based management. The quality and stability of administrative leadership in the school also is shaped by the district. Other aspects of the broader organizational culture of the district, in addition to what was mentioned above, are important, too. Whether this culture focuses on improving student outcomes, assuring equitable and high-quality learning opportunities for all pupils, encouraging teacher learning, and so on, shapes the expectations and perceptions at the school level. Louis and Kruse and Associates (1995) also cite the importance of school autonomy as an ingredient of a successful learning community. However, in a later study Marks and Louis (1997) argue that empowerment is a necessary but not sufficient condition of achieving change in teachers' work and instructional practices, and the effects of

empowerment vary depending on the areas of influence teachers are given.

Louis and Miles (1990) argue that district relationships with a school can be a continual source of problems for it, even where districts try to be highly supportive of school improvement efforts. Structural and normative constraints are not easily reversed by a single initiative or by one regime.

Little (1996) examines the importance of the policy environment surrounding the school. For example, she illustrates the need to link professional development opportunities inside and outside the school, and she calls for the development of a professional community outside the school. Similarly, a study by Leithwood, Jantzi and Steinbach (1998, in press) suggests that district policies and resources are the strongest set of district conditions influencing organizational learning, and that the flexible use of release time for planning and professional development, for example, promote both individual and collective learning (p. 108).

Even where a network for innovation is employed, such as adoption of a New American Schools Development Corporation (NASDC) design, the role of the district is critical in providing relevant information to the schools, assuring them enough autonomy to implement the new design, and helping to define a clear working relationship between the school district and the NASDC design teams. An analysis by the New American Schools corporation finds not surprisingly, for example, that there must be a system-level investment in the new model(s) (Stringfield, Ross, & Smith, 1996).

Castle and Estes (1995) examine districts implementing *high performance learning communities* . One of the desirable dimensions of a design is a cohesive management strategy at the district level which includes opportunities for employee involvement in management decisions, policies which must be promulgated at the district level.

Firestone and Bader (1991) examine three school districts which redesigned teaching. Some of the important district-level factors include the leadership of the superintendent and board, their working relationship, and the working relationship with teachers and teacher associations. Districts also made key decisions about job and organizational design, such as the authority and autonomy of teachers, rank and remuneration, and other factors.

Spillane and Thompson (1997) emphasize the role of the district in supporting ambitious

instruction. The district can convey new ideas drawn from external policy and professional sources and transmit them to those working within the district. They employ the concepts of human, social, and physical capital in elaborating their argument.

Rowan (1990) contrasts two strategies which might be employed by districts for the organizational design of schools related to school improvement. The control strategy differs from the commitment strategy. The latter employs Bryk and Driscoll's (1988) definition of school community as embracing three core features: a shared value system, a common agenda of activities, and collegial relations among adults coupled with a "diffuse" teacher role. By contrast, the control strategy focuses on development of a standardized system of input, behavior, and output controls that constrain teachers' methods and content decisions related to instruction. That system includes curriculum alignment, competency testing programs, teacher evaluation systems, etc. In other words, Rowan sees a contrast between many of the features of what has since come to be understood as systemic reform promulgated by districts and states, and the learning communities approach.

Louis and Miles (1990) also contrast the "old" and new models focusing on effectiveness rather than efficiency. Like Rowan, they emphasize professional judgment rather than rules as a feature of the new model, among other things, but they differ from Rowan by including such dimensions as accountability under the new model.

Little (1990) emphasizes the importance of district-sponsored professional growth opportunities for secondary school teachers. Similarly, District 2 in New York City has developed one of the most comprehensive efforts to incorporate professional learning communities in its school reform designs (Elmore, 1997). Elmore describes the elements of the strategy to use professional development to change instruction system-wide. The professional development model must be organized managerially and focus on system-wide improvement of instruction. A strong belief system or culture of shared values around instructional improvement is the foundation for a coherent set of actions and programs. Elmore reduces the complexity of the ideas to seven organizing principles. Those which relate most directly to the concept of learning communities include an emphasis on the creation of lateral networks among teachers and principals who have a strong interest in instructional improvement. Also, an emphasis on collegiality, caring and respect is essential.

Perhaps one of the most important ideas to be induced from Elmore's description of the District 2 reforms is that learning communities must be part of a systemic strategy of instructional improvement which is organized conceptually and managerially. The Office of Educational Research and Improvement at the U. S. Department of Education is supporting a five-year contract involving the district as well as two researchers, Lorin Resnick and Richard Elmore, to further develop and study this model.

Role of the State : States have played a critical role in advancing education reform at least since the publication of *A Nation at Risk* in 1983 with much of their effort concentrated in the areas of governance, student standards, and teaching (Firestone, Bader, Massel & Rosenblum, 1992). Many of these reform efforts have strengthened state authority vis-à-vis local districts. However, a debate exists as to whether this centralization has been a positive or negative development (Fuhrman & Elmore, 1987; Clune, 1993). Systemic reform (Smith & O'Day, 1991) is at the center of this debate. Systemic reform at the state level calls for alignment of outcome standards, curriculum, assessment, professional development, governance, and a host of other state policies.

One aspect of this debate is whether state efforts oriented toward systemic reform have been hospitable to the creation of learning communities. By the end of the 1980s it had become clear to reformers that the social organization of schools, including the nature of the work place for teachers, was itself problematic (Rosenholtz, 1991). This recognition led to increased attention to how state policies might promote fundamental restructuring of schools. Charter schools, and the deregulation associated with this movement, are an example of state supported restructuring which may create conditions conducive to building learning communities. To the degree that state systemic reforms promote greater opportunities for teachers and incentives for professional growth, these strategies can be viewed as supportive of, or at least not inconsistent with, the principles of learning organizations. On the other hand, and the greater the danger, say critics, is that state-driven initiatives may pre-empt teachers' own initiatives to organize themselves professionally for instructional improvement. In addition, systemic change is also undermined when state (and local) leaders attempt to reduce conceptual and practical complexities in the interest of fast-paced implementation (Little, 1993, p.140).

Another aspect of the debate on systemic reform attends to the balance of regulatory and capacity building strategies for promoting school reform. The choice of which to emphasize, or what mix, is salient in state policies to "fix" failing schools. What "threats" and requirements should be part of such policies and what capacity building approaches ought to be provided to help the schools? This has only recently begun to be addressed by research (Cibulka & Mintrop, 1997).

Some states have intervened to restructure failing schools (Newmann, King & Rigdon, 1997). Others have established incentives and monetary awards for exemplary performance (Wohlstetter & Smyer, 1994). A growing number of states have moved away from traditional measures of educational performance, establishing outcome standards and attaching (high stakes) accountability systems to their education policies (Elmore, Abelmann & Furhman, 1996). Preliminary research suggest that while state policy in some cases has positively influenced curricular changes, there are other indications that these changes did not connect with or change teachers practices (Cohen & Ball, 1990; Firestone, Bader, Massel & Rosenblum, 1992). It is not yet well established how effective these various performance oriented levers are, nor are the relationships between such levers as accountability and learning communities well understood. It is not clear whether these efforts will have second-order effects that facilitate opportunity, or alternatively, make it more difficult, to create learning communities.

The use of accountability and outcome standards is a strategy being employed by many states which is relevant to learning communities. In promoting reforms, states are calling for agreement on what students need to know and what teachers need to teach. Though accountability systems and standards in and of themselves would not build learning communities, they may help to create the conditions and the frameworks for building the shared vision and goals that many researchers suggest are essential elements of high performing organizations and learning communities. These remain important empirical questions to be tested.

States vary widely in the degree to which state policies and resources are directed toward the professional development of teachers. The Consortium for Policy Research in Education (1997) published a 50-state profile of policies and programs for professional development of teachers. A small number of states have a primary focus on learning communities to improve their educational

system, while some states include the concept as a piece of an overall improvement effort. The majority of states, however, make no direct mention of learning communities in their professional development policies.

A number of empirical studies underscore the important strategic role of state policies. For example, Firestone and Bader's (1991) study of three schools districts also points to the importance of the state's policies when districts undertook innovation attempting to redesign teaching.

A number of conceptual studies also incorporate into educational improvement strategies the critical role of the state. McLaughlin and Talbert (1990), for instance, provide a conceptual framework for secondary school teaching which includes the broader policy system.

In sum, the state's role is acknowledged as significant with respect to fostering learning organizations at the school level. As in the case of the school district's role, the literature points to the complexity of achieving such policies. Indeed, there are sharp disagreements about what those state policies ought to be, and there is evidence that not many states have proceeded very far in developing explicit policies to foster high performance learning communities at the school level.

Role of stakeholders—families, business, and community: Obviously, schools are embedded in a policy system in which neighborhoods and the broader community, with its constituent actors, play an important role. Parents are part of this community. The roles of these community actors in the learning community is not well developed. Are they needed to help support a learning community? Are they part of the learning community itself?

Hill (1995) includes teacher leadership in community organizations as a factor in a strong learning community. McCaleb (1994) argues that a community of learners should involve collaboration with families and community members. Obviously, the role of parents is critical to successful learning; and Fullan (1991) suggests that successful educational reform requires the conjoint efforts of parents and schools. Community members can become valuable partners in validating each student's cultural and linguistic heritage. Moreover, trust and respect are conditions which support school-based community, not only within the school among and between teachers, but with key members of relevant external communities, including parents (Louis & Kruse & Associates, 1995).

Louis and Smith (1992) examine the role of different community contexts as factors shaping teacher engagement with pupils. They focused on urban, suburban, and rural differences as well as the impact of social class. Their research suggests, even if it does not fully resolve, that learning communities may have to deal with significantly different issues in different kinds of communities, and that these task differences may have implications for the membership, structure, and functions of these learning communities.

McLaughlin and Talbert's (1990) conceptual framework for secondary school teaching includes the educational value system of the community (as well as the value system of society and the profession).

Darling-Hammond and McLaughlin (1995) consider aspects of the macro policy context that foster or impede teacher's incentives and ability to acquire new knowledge, skills, and conceptions of practice. Among the strategies is partnerships with neighborhood-based youth organizations.

Not all research assumes that local community involvement is possible. Wehlage et al. (1989a, 1989b) see learning communities as a way of compensating for lack of strong family and community support among students with histories of school failure.

Louis and Miles (1990) also factor in the *problems* of the local environment in strategies for improving urban high schools. However, they do not conclude that these problems preclude effective reform strategies from occurring.

Wang, Oates, & Weishew (1995) focuses on what works to increase the capacity of inner-city schools is designed as a broad-based, school-family-community-linked, coordinated approach to improving student learning. According to this model, schools must be linked with other learning environments, including homes, churches, post-secondary institutions, libraries, and workplaces, to support the learning of all students (p. 485). The model includes an organizational support system and planning process for teachers.

Though a significant body of literature exists about both family and community, it is largely unexplored despite the rhetoric. There is little to no empirical literature on the interface and role of the broader community and its stakeholders in learning communities. This may impinge on school's ability to extend the concept of learning community beyond the school.

In the organizational literature on new paradigms for high performing organizations, the importance of adapting the organization to environmental demands has been recognized (Lawler, 1986; Lawler, 1992; Mohrman & Wohlstetter, 1994). This is reflected by the inclusion and involvement of customers, suppliers, and multiple stakeholders in shaping organizational direction, strategy and action. Possibly, this has evolved from (organization's) earlier experiences with sociotechnical systems and work design which led to the heavy use of work teams, multi-stakeholder advisory groups, and other forms of participatory management (Nadler et al, 1992). However, this shift (toward the active inclusion and engagement with stakeholders beyond the school) is not really reflected in the literature on schools as learning communities, despite advocacy for it from scholars like Darling-Hammond (1997), Fullan (1991), Heath and McLaughlin (1996), Kirst (1991) and others.

On the other hand, it is important to recognize, of course, that there is a long (and frustrating) history of efforts to improve school-family-community linkages in American public schools (Cibulka & Kritek, 1996). Some of these efforts have been programmatic in nature and include such activities as parent education and parental participation in curriculum delivery. Other efforts have employed managerial structures such as site based management and coordinated services for children. Still other approaches have been designed to alter governance in fundamental ways such as those in the Chicago schools designed to replace bureaucratic controls by empowering families and giving them consumer power (Hess, 1991, in Cibulka & Kritek, 1996), charter schools, and vouchers. Although, these recent efforts at governance reform represent an important watershed in the tradition of school community relations (Cibulka & Kritek, 1996), they underscore the challenges and complexity of any efforts to fundamentally alter or restructure the nature and power associated with these relations. Thus far, the literature on schools as learning communities appears to have almost ignored these larger debates about increasing parental, family and community influences in the delivery of K-12 education.

Professional Associations and Credentialing Institutions : Support for the concept of learning communities has been a growing part of the agendas of some professional associations and credentialing institutions. For example, the National Education Association's KEYS project is an

effort to build a nationwide school improvement effort. The KEYS rubric is a diagnostic framework which allows teachers and schools to identify key attributes of their school compared with other schools. This school improvement focus is a departure from the traditional collective bargaining focus of teacher unionism.

The relationship between teachers unions and education reform has been a complex one (McDonnell & Pascal, 1988). The focus on redefining the union's role in relation to educational improvement has become a central feature of reform discussions concerning teacher unionism (Kerchner, Koppich, & Weeres, 1997). This changing conception of unionism is important to the development of political support for reorganizing schools as learning communities. The latter involve broader definitions of the teachers' role with respect to control over a variety of educational policies and practices. Heretofore, these questions either were reserved to district (or school) administrators or were proscribed by lengthy and legalistic bargaining agreements.

Credentialing institutions such as the National Council for Accreditation of Teacher Education (NCATE) also have moved to incorporate into their standards elements which are supportive of learning organizations. NCATE (1987, p.43) standards require teacher preparation institutions to "cooperatively develop research questions and inquiry strategies to encourage the involvement of practicing professionals with professional education faculty to further develop and refine the professional knowledge bases." NCATE's encouragement of professional development schools also is consistent with a model of collaboration which engages college and university faculty with school-level professionals around strategies of educational improvement, as these relate to pre-service preparation of teachers. Darling-Hammond and McLaughlin (1995) also mention the importance of professional development schools as a device to promote teachers' professional growth.

The Interstate New Teacher Assessment and Support Consortium (INTASC) articulates standards for a common core of teaching knowledge and skills to be acquired by all new teachers (Interstate New Teacher Assessment and Support Consortium, 1992). INTASC was established to enhance collaboration among states interested in rethinking teacher assessment for initial licensing as well as for preparation and induction into the profession.

The National Board for Professional Teaching Standards (NBPTS), committed to basic reform in US education, particularly in teaching and learning, has embarked on a three-part mission to establish rigorous standards and testing for a voluntary system to certify teachers who meet the established standards.

In a broader sense the idea of learning communities is at the core of the attempt to define what professionalism means in the field of teaching. The idea of the teacher as learner is central to this redefinition. Eraut (1995) offers a model of professional knowledge within a client-centered orientation. The model has three conceptual components: (1) the professional practitioner, which includes processes for acquiring information about students, among other things; (2) the professional school, which includes staff relations and professional development which serves the interests of clients, students, and the public; and (3) a framework for determining client needs which focuses on values and the moral commitment to serve the interests of students and to take proper account of their views and those of parents.

Role of Reform Networks and University Partnerships : It has come to be recognized that it is difficult for schools to sustain a program of reform without external support. Of course, districts are important forces which can promote reform, as was suggested above. However, there has been increasing emphasis on bypassing local districts. One strategy is to invent new forms of local organization that bypass or cut across traditional district jurisdictions. Schools can become part of national school reform networks—with or without active district support for those linkages.

The National Network for Education Renew~l is a network of universities engaged simultaneously in revamping teacher education with restructuring. Salient goals call for creation of "centers of pedagogy" that are dedicated to creating highly effective teachers, who have similar autonomy and prestige as law and medical schools. The network's goals and its centers' agenda are based on 19 postulates or objectives as outlined in its founder's text, *Teachers for our Nation's Schools* (Goodlad, 1990). Building linkages with university networks such as this, local universities, or other educational cultural institutions provides a variety of advantages such as access to expertise and normative support.

Lieberman & Grolnick (1996) argue that professional reform networks are increasingly important in the effort to reform American education. Networks operate partly outside the confines of the institutional roles prescribed for teachers in their particular work setting. Based on an analysis of sixteen networks, they identified five recurring tensions which served as organizational themes: (1) purpose and direction; (2) building collaboration, consensus, and commitment; (3) activities and relationships as building blocks; (4) leadership, cross-cultural brokering and facilitating and keeping the values visible; and (5) dealing with the funding problem. These tensions can be considered inherent in the organizational dynamics of network building.

An early study of networks by Parker (1977) argued that networks should have: 1) a strong sense of commitment to innovation; 2) a sense of shared purpose; 3) a mixture of information sharing and psychological support; 4) an effective facilitator; and 5) voluntary participation and equal treatment.

The New American Schools Development Corporation (NASDC) Program provides one approach to designing nine new models of schooling accompanied by a strategy for scaling-up, i.e., building and sustaining the reforms within districts and states (Stringfield, Ross & Smith, 1996). All of the NAS designs are required to have professional development components in place to support reform efforts. In general, the criteria or strategy associated with these designs for professional development is that they have in place a system that is responsive to the needs of the school and school professionals in particular, and one which assures that the instructional staff can help students meet high standards. All activities are specifically site-based and tailored to the needs of the respective school communities.

Bodilly (1995) reports on the conceptual framework for evaluating the NASDC efforts by the RAND corporation, which places a heavy focus on formative evaluation techniques appropriate to the organizational learning which occurs in the schools. It is not clear, however, whether the evaluation will include the entire NASDC program with its assumptions concerning the utility of prescribed models for addressing change.

The Muncey and McQuillan (1996) study of the Coalition of Essential Schools documented that professional development opportunities for teachers to set their own learning needs was one of

the factors distinguishing successful implementation in some schools from others with less success. The Coalition model begins from the premise that professional development and professional community are inseparable and that the context of professional culture is key to making professional development effective. A learning environment for adults must mirror the theories of learning espoused for students.

Some of the NAS designs place greater emphasis than others on this learning community dimension as a central feature of the reform approach. The ATLAS (Authentic Teaching, Learning and Assessment for All Students) model, for example, attempts to build an extended learning community. A balance of formal learning opportunities and on-going opportunities to try new practices and reflect on their effectiveness with colleagues and peers is emphasized in the professional development of teachers. The ATLAS Communities promote a school culture of reflective practice in which continual learning is valued, expected, recognized, and supported.

The CoNECT Design for School Change, another NAS design, is built on the principles of Peter Senge's learning organizations. A strong professional community is essential to address what the project regards as the four key tasks of education: redefining the nature of school to produce world-class results and performance; providing students and teachers with appropriate technological infrastructure; creating conditions to enhance life-long learning; and developing strategies for initiating and sustaining change.

Comer's (Haynes, Comer & Hamilton-Lee, 1988) model of school reform places a strong emphasis on the creation of "organic" educational communities which include governance and management teams of teachers and parents who focus their efforts on problem solving. The staff development efforts are tied to specific school plans and, therefore, vary from site to site.

Levin's (1991) Accelerated Schools model places heavy emphasis on a professional development model which exposes teachers to a new set of values and practices. The aim is to bring all students into the mainstream by providing all students with enriching activities previously reserved for gifted students. The Levin model, therefore, is a guided approach to professional development which, nonetheless, places great emphasis on self-initiative by professionals.

University partnerships offer still another approach to provision of external support for

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school's reform efforts. Zetlin and MacLeod (1995) present a case study of the restructuring of one elementary school in impoverished East Los Angeles in partnership with a neighboring university. School staff and university faculty from special education, curriculum and instruction, family studies, and counseling developed a plan of action for school reform. The restructuring focused on curricular and instructional reform, increasing parental involvement, and integrated services. The structural and organizational changes enabled teachers to establish professional norms of a learning community.

Foundations have in some cases been an important external source of support for school reform efforts. For example, the Carnegie Foundation's (1996) program to reform middle schools has encouraged the reorganization of middle schools in ways which redefine teacher's roles and afford the opportunity for learning communities to develop.

The research literature as described above tends to view networks and partnerships as assets to school reform, not withstanding the complications and problems which sometimes attend their implementation. The literature does not focus on the possibility that cost-benefit ratio for schools linked to these external influences could be negative. This is especially likely if the school indiscriminately attaches itself opportunistically to a variety of external reform programs, which can dissipate the attempt to develop a clear focus and can require time-consuming maintenance efforts. As the research literature on learning communities develops, hopefully this question will receive attention.

Role of the Federal Government : The role of federal programs in supporting learning communities has not received attention in research studies. Clearly, however, federal policy has an important potential role.

Historically, the federal role in equity has been critical for ensuring attention to special populations which have been left under-served or poorly served by the public schools. This focus on equity for special populations led to federal programs which were narrowly categorical and highly regulatory. This created significant problems if personnel and resources from each funding stream could not be blended. In recent years, the U. S. Department of Education has encouraged consolidated local planning to overcome these programmatic barriers. Congressional initiatives in comprehensive school reform have focused on organizing and revitalizing entire schools rather than

on piecemeal approaches and reforms (Fiscal Year 98, Department of Labor-HHS-Education Appropriations Act, PL.105-78). Key programs such as Title I now encourage school-wide programs. Furthermore, federal programs have been restructured to encourage systemic initiatives at the state level. This focus on a more comprehensive model of reform and greater coherence in effort may contribute (positively) to building learning communities.

A number of federal programs encourage coordination of professional development across different programs and their incorporation into broader state and local strategies for reforming schools. There are new requirements for coordination of special education programs with regular programs of instruction. There is a need for actual research on how successful these effort have been. It should be noted, however, that important statutory and political barriers to closer coordination across programs remain. In light of this fact, we need to know more about whether federal programs continue to impose barriers to coordination and school-level initiatives and how these barriers relate to efforts to create learning communities.

The Office of Educational Research and Improvement has supported research projects such as the Higher Performance Learning Communities initiative, as well as the project under which this research is funded, which should contribute valuable findings about the factors which create and sustain learning communities in schools.

Summary : The above overview of the research literature on the policy environment certainly underscores its importance as a factor to consider in development of successful learning communities. For teachers and other school officials, the elements of that environment are increasingly complex and difficult to comprehend. The policy environment provides both opportunities and constraints. Undoubtedly, some schools, particularly those whose clients are socially advantaged, have more favorable policy environments than others. One important task of research is to document these differences and how they shape opportunities for schools to restructure themselves as learning organizations that can improve student achievement dramatically.

Alongside these actual differences in the policy environment, school officials differ in their ability to exploit the policy environment in ways which enhance the potential for learning communities to be built. A second benefit of better research in this area, then, is to inform local

school officials about the most efficacious strategies for using available opportunities to enhance reform and to improve their understanding of the specific costs and benefits of different strategies. Since learning communities take very different approaches in their basic formulation and design, as has been shown elsewhere in this review, the way they relate to their policy environments also differs. In other words, acquiring better research information on the various features of the policy environment surveyed above is integral to the development of a sophisticated knowledge base on learning communities themselves.

School Level Leadership

One of the few factors that seems to enjoy relative consensus in the literature on learning communities is the necessity of good leadership. Both education and organization literatures speak to the changing needs of organization from leaders.

In addition to the organizational learning literature of schools and business, knowledge on leadership can be found in the vast literature on educational leadership and organizational change. Much educational research focuses on the area of reforming or restructuring schools. Researchers are recognizing a need to rethink the roles of administrators and teachers (**Leithwood et al., 1999, Devos et al. 1998,** Office of Educational Research and Improvement, 1998; Smylie & Conyers, 1991; Darling-Hammond & McLaughlin, 1995; Wilson, Peterson, Ball & Cohen, 1996). Embedded in this literature are changes in the concept of leadership at the school level. Leadership in general is a subject that has received much attention in many bodies of literature. An adequate treatment of the topic as a whole would require more space than what this paper will allow. Indeed, many entire texts have been written on the subject. Additionally, we recognize that a reconceptualization of leadership affects leaders at all levels of the educational system. However, in our attempt to adequately treat this topic, this paper will concentrate on the implications for school-level leadership that organizational learning and learning communities hold.

Leadership has been a subject of intensive study for many years. Thousands of studies have focused on effective leaders. Definitions of leadership include persuading others to pursue a common goal, influencing others' actions and opinions, and building cohesive and goal-oriented teams (Lunenburg & Orstein, 1996). More and more, the research is shifting from viewing leadership as an individual characteristic or trait or skill, to a dynamic process involving more than one individual.

MacBeath, Moos, and Riley (1996) define leadership as "a shared and collaborative activity" (p. 243). In keeping with this definition, much of the research on school reform advocates involving all of the stakeholders in the management of the school through participative management structures (e.g. Louis & Miles, 1990; Verdugo, Uribe, Schneider, Henderson & Greenberg, 1996; Darling-Hammond, 1997). Teachers, parents, and the business community are asked to participate in such areas as planning, goal-setting, curricular decisions, budgeting, and staffing activities. Many of these areas previously fell solely in the domain of principals or administrators. These changes hold implications for the role of administrators. Inclusion of other parties diminishes the importance of, and possibly eliminates, the role of the single decision-maker at the top of the hierarchy.

As schools become places of shared leadership, the principal will arguably be freed from many duties previously considered typical of the position. These duties will be handled by participative management structures shifting much responsibility to members of the school community other than the principal. The principal does not gain more free time. On the contrary, many tasks will remain, even as the way in which they are performed changes.

Research also suggests some changes in roles for teachers and administrators that will require different skills and tools than what has previously been available. Quite different skills are required from an administrator who leads a group in consensus building than from an administrator who must enforce his or her own policy upon employees. To change the role of leaders in today's schools and organizations implies a need for a change in the preparation of these leaders (National Foundation for Improvement of Education, 1996).

Research is increasingly showing that schools as centers of organizational learning will require leaders such as described by Leithwood, Leonard, & Sharratt (1998) as "transformational leaders." There is some evidence that Leithwood's eight dimensions of transformational leadership correlate positively with successful organizational learning in schools. He describes these dimensions as including practices aimed at identifying and articulating a vision, fostering the acceptance of group goals, and providing individualized support for staff members. Transformational leadership practices also aim to stimulate organizational members to think reflectively and critically about their own practices, and to provide appropriate models of the practices and values considered

central to the organization. Holding high performance expectations, building shared norms and beliefs (culture), and structuring the organization to permit broad participation in decision-making also can have important consequences for OL (1998, p. 249).

Conclusions from seven studies on the relationship of transformative leadership to organizational learning have resulted in the identification of essential aspects of leadership necessary to facilitate the development of collective and individual learning (Leithwood et al. , 1999). They include appropriate problem interpretation skills, facility in collaborative goal development, role responsibility and knowledge as an important leadership value, anticipation of constraints and obstacles likely to arise, the perception of obstacles to goal attainment as minor impediments, the capacity to learn and build on the perceptions of teachers, the ability to anticipate and handle constraints flexibly, skill in maintaining a smoothly functioning group process, openness to new information, the ability to keep groups focused, checking for consensus, commitment to planning follow-up for group discussion, confidence, a strong reflective disposition, the ability to learn form experience, and the use of humor in tense situations. Collectively, these emerging aspects of successful transformative leadership suggest that the development of a viable learning community requires educational leaders to engage in an on-going and reflective learning process; to recast themselves as leaders as learners Other literature supports and extends the knowledge, skills, and tools mentioned by Leithwood (Devos et al., 1998). We turn now to the suggested knowledge, skills, and tools that these "new school leaders" will need.

Instruction and teaching : The task of instructional supervision has long been emphasized in the principal leadership literature. At the school level, instructional leadership must focus both on individual classrooms and the whole school.

Changing conceptions of teaching and learning are affecting the role of instructional leader. As our understanding of how people learn deepens, the knowledge base for teachers expands. As conceptions of the teaching and learning process become more complex, it becomes an increasingly more difficult task to structure activities that meet the learning needs of a diverse group of students in a way that emphasizes deep understandings of content and processes. Though there is no consensus on exactly what this knowledge base should consist of, most researchers will agree on certain

categories. Shulman (1987) organizes the minimal categories of teachers' knowledge base in this way:

> -content knowledge;
> -general pedagogical knowledge, with special reference to those broad principles and strategies of classroom management and organization that appear to transcend subject matter;
> -curriculum knowledge, with particular grasp of the materials and programs that serve as "tools of the trade" for teachers
> -pedagogical content knowledge, that special amalgam of content and pedagogy that is uniquely the province of teachers, their own special form of professional understanding;
> -knowledge of learners and their characteristics;
> -knowledge of educational contexts, ranging form the workings of the groups or classroom, the governance and financing of school districts, to the character of communities and cultures; and
> -knowledge of educational ends, purposes, and values, and their philosophical and historical grounds (p. 8).

Although this list is not presented as a complete list, it does show the vast knowledge base teachers need. As our conception of the teaching and learning process grows in complexity, so too does the work required of teachers grow in complexity.

Although this knowledge base is readily applied to teachers, some argue that the principal's role is affected by this conception of learning, as well (e.g. Leithwood et al. , 1999, Devos et al, 1998, Smylie & Conyers, 1991; Ball & Cohen, 1997; Darling-Hammond, 1997). First, as the administrator, a principal's task is to supervise the teachers and ensure a minimum level of instruction for all students. A study by Nelson and Sassi (1998) emphasizes the importance of principals' knowledge base of good pedagogy. A group of administrators evaluated a teacher based on a video of her reformed mathematics classroom. Over the course of a three-year period, these administrators drastically changed their evaluation of the same teacher's lesson based on their own changing views of what counted as mathematical knowledge, and how mathematics is learned. This would suggest that as supervisors of teachers, principals need an equivalent knowledge base of the teaching and learning process as the classroom teachers do.

Secondly, the role of principal includes the task of instructional leadership. The idea of principals as instructional leaders is not new. Ball & Cohen (1997) recognize that one of the challenges to improving instruction is that few principals exercise their role as instructional leader. Studies focusing on how school principals spend their time are striking in that very little time is available to focus on instruction. Principals' days are characterized by numerous short interactions

with students, parents, and teachers mostly focusing on immediate problems (Lunenburg & Ornstein, 1996). This type of reactive stance is typically unable to devote time to the more future-oriented task of improving instruction. Smylie and Conyers (1991) suggest that a renewed focus on instructional leadership in the role of principals is an important piece of school improvement. Darling-Hammond (1997) proposes administrator licensing to ensure a good foundation of knowledge about teaching and learning.

Administrative and school governance : Despite the difficulty of the task of classroom instruction and the ability of this one task to consume all of one's time, many reforms call for the participation of teachers in other aspects of the school and the education system. The National Education Association's KEYS program calls for teams of all the school stakeholders, teachers included, to participate in the planning, implementation, assessment, and monitoring of school change processes (Verdugo, et al, 1996). James Comer's School Development Program similarly directs schools to involve all stakeholders in school improvement teams and for teachers to play leadership roles in these endeavors. Coalition of Essential Schools calls for all staff members to participate in policymaking, planning, and school management. These examples are widespread and typify current school reform strategies. To involve teachers in these more administrative and managerial tasks represents a shift of their role in the school.

In addition to more administrative tasks, research also has examined the implications of teachers sharing in the governance and management of schools. Darling-Hammond (1997) describes as a commonality of high performing schools the concept of teachers performing more than just the role of classroom instructor. Teachers are involved in school decision making in all areas (curriculum, professional development, staffing, budgeting, and peer evaluation), as well as fulfilling roles as teachers, counselors, advisors and coaches.

Not all researchers agree on the involvement of teachers in managerial activities. Some research suggests that adding administrative tasks to teachers' roles may be to the detriment of students. Overworked teachers may suffer from burnout more quickly or shortchange the students by requiring time spent on non-instructional tasks. In analyzing the teaching in 40 classrooms over the course of a year, Knapp (1995) concluded that teachers taught for meaning in only two-thirds of their

subject areas. This more intensive style of teaching, apparently requires more time of teachers. Thus, some argue that time required for non-instructional activities will detract even more from this essential act of teaching.

Additionally, such leadership requires an acceptance on the part of the school community. Studies show that the school's specific governance structure is less important than that it be fully implemented (Rowan, 1990) and that it be legitimated by the staff (Verdugo, Greenberg, Henderson, Uribe, & Schneider,1997).

Political dynamics : In addition to instructional and managerial roles, leadership must attend to the political dynamics. A more recent field of study, the politics of education, analyzes these interactions, uses of power, and patterns of influence among educators and associated organizations.

At the school level, micropolitics has received much attention. This research has pushed in many directions (Malen, 1995). However, a dominant theme is the principal's use of power and authority.

Crow encompasses a political dynamic in his two-part view of leadership. The first part encompasses what Crow (1998) calls the systemic features. In this, leadership "flows throughout the organizational system" (p. 140) among individuals functioning within their organizational roles. This acknowledges the structure of the institution and the various roles within in it. The second part of Crow's concept of leadership accounts for the political nature of the role. This expands the historical notion of leadership as an individual quality or behavior and sees leadership as a relationship involving the active participation of leaders and followers. All participants attempting to influence one another toward a particular purpose characterizes this concept. For example, parents try to influence a principal to adopt a certain policy or leadership style that fits their vision. A principal will similarly try to influence the parents to accept her particular policy or style. Parents will exert influence upon the principal based on their reactions, whether they be halfhearted or enthusiastic.

Angus (1996) also emphasizes the political aspect of leadership. He explains:

> . . .the predominant perspective misconceives organizational dynamics as sets of behaviours that can largely be predicted and contained within school cultures, and which can largely be controlled by administrators. This is because culture is considered, by and large, as an organizational variable . . . Such a perspective on organizational dynamics fails to acknowledge that culture is shifting and contested, and is continually being constructed and reconstructed (pp. 967-968).

The shifting and contested nature of culture indicates the type of environment that leadership must deal with. In such situations, power resources, parity and reciprocity of positions are the realities of leadership.

In their study comparing the contexts of change in three European countries and its effect on school leadership, MacBeath, Moos and Riley (1996) also note a political dynamic to leadership. They examine the changing balance of power among teachers, schools, local authorities, and the national government. The headteachers in the study consistently named skills involving balancing the interests of the Board, scope of influence of parents, strength of the role of teachers.

Henderson and Hawthorne (1995) describe the political dynamics of schools as one of three aspects of a learning community. In their view, power and influence are involved in resource acquisition. Since the learning community's needs will not always be in harmony with those in power, political activity will be required to obtain the necessary resources for the school community. A second aspect of their described learning community is the democratic involvement of all voices, dealing with issues of conflict and communication. From a political analyst's standpoint, this can also be considered an issue of political dimensions since those engaged in conflict will be utilizing available power resources to influence others.

Current research on school reforms also recognizes their political dimension, often in contexts beyond the individual school. Fuhrman,(1994) describes the political challenges involved in educational policy changes. The fragmented nature of our political system, a focus on elections by decision makers, an overload of weighty policy issues to decide and specialization leading to further fragmentation are some of the difficulties that all levels of government faces in systemic reform.

Generally, the literature suggests that successful leaders of schools will have a certain amount of political savoir-faire. Knowledge of the dynamics involved in vying for influence over others, recognizing power resources, building coalitions and utilizing networks are keys to successfully fulfilling the leadership role.

Collaboration : Another key skill involves the interactions of individuals. In an organization that utilizes participative management, these leaders must have the skills to work together effectively. Given that reforms are endorsing a view of leadership that calls for all of the

stakeholders to collectively plan and problem solve, all of these new leaders must have the skills to be able to work effectively in a group. Knowledge of group cohesion, teamwork pitfalls, and communication are essential for all of those involved in collaborative endeavors (Pounder, 1998; Schneider, Verdugo, Uribe, & Greenberg, 1993; Louis & Miles, 1990).

Vision : The leader of successful organizations, including schools, must build a shared vision for the organization. Leithwood (1998) describes articulating the vision as part of the characteristics of a transformational leader. These actions aid in keeping the momentum for change strong and remind everyone of the importance of their task. This "visioning" is an ongoing process involving both individuals' personal visions as well as a sense of a collective vision. The existence of a shared vision has been identified as a characteristic of successful schools, but they must be developed and sustained over time. A shared vision cannot come from inattention (Louis & Miles, 1990; Fullan, 1995; Darling-Hammond, 1997).

Senge's (1990b) terms this aspect of leadership as being a designer of an organization. While not describing schools specifically, Senge's proposes that a single individual named "in charge" of an organization is inadequate to meet the demands placed on the organization. The role of leadership must change from being a director of an organization to being a designer of learning organizations. Senge likens his view to a large ship. In the past, the leader may have been identified as the captain or the navigator. The one who designed the ship, how it would be laid out and its central processing functions, however, performs the most important role for this ship.

Steward of the members : As stewards, Senge (1990b) touches on the human nature of the leadership role. The human members of the community have social and psychological needs that affect the dynamic of the organization. Some research attends to the idea that encouraging and sustaining the life long learning of students and adults in a school requires many supports. Given that elements of the internal and external environment can hinder the development of a culture of learning, leaders can mitigate the effects of these impediments (Schneider, Verdugo, Uribe, & Greenberg, 1993) and ease the human fears of change. School leaders allow, design and support opportunities for collaborative learning with an emphasis on authentic performance and assessments (Crow 1998; Pounder 1998; Darling-Hammond, 1998).

Systems thinking : Another tool important for leaders will be an ability to recognize their organization as one piece of a larger environment. Factors internally and externally will affect the work of the organization, the resource availability, and the consumers' needs and expectations. A leader who can recognize the larger picture and use this information in decision making will be practicing a systems view. Senge argues that this view has certain archetypes or structures that repeatedly occur in organizations. In addition to viewing schools as part of the larger system, a knowledge of these archetypes can help a leader to identify his or her organization more readily when it is bound for less that desirable outcome. For example, one archetype is that of eroding goals. In this pattern, an organization that cannot meet high standards lowers the standards to appear more successful. Such a pattern does not lead to truly improving work processes or outcomes (Senge, 1990b).

Keeping up with changing needs : Successful leaders will need strategies to enable their organizations to adapt to an ever-changing environment. Many of these strategies have been developed in business contexts, though more are being experimented with and utilized in educational settings.

Strategic planning is one commonly cited tool for improving organizations. Senge (1990a, 1990b) extends this to managing strategic dilemmas. This tool basically refers to organizational leaders not limiting themselves to making difficult either-or choices. In business, this would be typified by a cost versus quality dilemma. Schools could be faced with a choice between effectiveness versus efficiency, or choosing to fund one curriculum advancement over smaller class sizes. U.S. manufacturers that have chosen one over another instead of addressing both have suffered disastrous consequences when faced with international competitors that improved cost and quality.

Related to this tool, Senge (1990a) describes using tools that help leaders to surface models that people hold that run counter to reality. Frequently people hold basic assumptions that are not addressed and that when left unaddressed, limit the creative power and prevent organizations from moving out of any stagnant circles. Recognizing the abstract leaps human minds make enables an organization to continually improve its effectiveness (Senge, 1990a).

Learning laboratories are one promising tool that businesses are beginning to use to help

senior managers to see consequences of their decisions more quickly than what is possible in real time. These microworlds enable leaders to explore possibilities that may seem to reckless or unfounded to be tested in reality. This opens up options to exploration that may otherwise be ignored as too risky.

Resource acquisition : A leader of a school will also be able to secure resources, whether they be finances, information, or personnel, in order to further the vision of the organization. Schools are commonly besieged with a multiplicity of programs and resources of various themes. These programs can compete with each other for attention, resources, and dedication. A leader of a successful school will be able secure these resources from multiple sources, but also be able to screen them to ensure a fit of programs and resources to the school's vision (Louis & Miles, 1990).

Leaders as shapers of organizational culture : Leaders need to address the individual and collective needs of the organization (Guskey, 1995; Senge, 1990a). Recognition of this by leadership is important. There is some debate in the literature as to whether the culture of an organization can or should be manipulated (Angus, 1996). However, other research does show that a leader can positively affect the culture of an organization (e.g., Leithwood, 1998; Bolman & Deal, 1989). Moreover, the concept of leadership as a *shared* endeavor underscores a need to increase the skills of all involved in education, teachers, among others. Leadership is increasingly linked to a human capital view of school (Spillane & Thompson, 1997), wherein adults and students alike are learners. The leader who views these parties as resources to be developed through collaborative strategies is committed to a central feature of a learning community. Organizational culture, in this view, is not only something to be manipulated. It is a resource for building a high performance learning community.

CONCLUSION

This review of the literature on learning organizations and schools as learning communities lends itself to a number of observations and tentative conclusions. First, there is a considerable gap between the OL literature and its counterpart in the schooling literature. While there is no reason to believe that the literatures in the two domains should be exactly alike, one would expect that the

schooling literature, which tends to be more recent, would avail itself more than it has of insights gained from the OL literature.

Both literatures, to be sure, display many of the qualities of exploratory research. For instance, in both literatures basic definitions of what constitutes OL differ. Both literatures lay out an array of concepts, which often overlap with one another. Some of these concepts in each literature have been subject to empirical tests. Despite these similarities, the work on learning organizations has a lamentable shortcoming. Those who do work on schools as LOs often fail to cite other relevant research, not only outside education, but also among individuals studying schools. The result is not only great confusion, but great duplication of effort. Some of this lack of recognition of others' work may be explained as an artifact of the initial burst of interest in OL, giving rise to a great deal of research in a short period of time. However, if OL is to mature as a field of study, it will have to develop a body of empirical research which builds cumulatively upon previous research. As indicated, this admonition seems especially applicable to work on schools.

In its early manifestations, it is possible to say that the literature on schools as LOs offers *tentative* support for the following propositions:

> The study of LOs in schools should not merely *describe* the characteristics of these organizations. It should *prescribe* the desired attributes and focus on how to achieve these qualities.
>
> At a minimum, both teachers and students must be viewed as learners whose needs should be met within a LO (Others may be included, such as administrators and parents).
>
> A LO is defined by a distinct culture and traditions whose features are a manifest object of attention by LO members. The culture of a LO is characterized by, among other things, an "ethic of caring" by all members of the LO.
>
> In a school, improved student learning should be the focus of a LO. Accordingly, adult members of a LO should have a shared vision centered on high performance for all pupils. They should utilize the most currently available information on how students learn, especially concerning students at risk of failure, who historically have been least successful in schools.
>
> Because learning is continuous in LOs, an important task of a LO is to learn how to learn and to provide opportunities for lifelong learning among all its members.
>
> Strong administrative leadership is required to build and sustain an LO. Leadership above the school level also is required to create positive conditions and opportunities at the school level. Not only is this leadership often at variance with traditional conceptions of the administrator's role, but it also reconceptualizes leadership as something which can be possessed by various actors and which has an institutional property beyond individuals in the organization.

The above propositions require further validation and refinement. However, the following issues which must be addressed before a better knowledge base on LOs can be built.

1. **There is a need for a clearer definition of learning.** It was apparent that this is a problem in the basic literature on LOs. For example, there is a debate about whether learning occurs when attitudes shift, or whether learning also requires a change in behavior. Also, since learning occurs naturally in organizations, we need to specify what kinds of learning can be considered desirable in contrast to learning which is negative.

2. **The definition of "community" needs clarification.** A relatively novel aspect of the LO literature applied to schools is the introduction of the concept "community." It is rare to find this concept in the LO literature which does not pertain to schools. Still, what exactly does community mean? Does it merely refer to the need to emphasize the shared culture of a school, or does it also imply that schools should embrace a broader conception of their *membership* ? It was pointed out that much of the literature on schools as LOs' fails to articulate clearly that high performance organizations must be open systems learning constantly from their environments and striving to adapt to the changing demands and needs they present.

Even if there were a clearer acknowledgment in the literature that schools must operate as open systems, there are complications in implementing this vision. If so, who are these new members--parents, community organizations, etc.? Do all of the members of the LO have common status in terms of the goals of a LO; for example, in what sense are parents expected to become learners, compared with teachers? As the definition of community broadens to include a wider range of members than those who traditionally have been core participants in public schools, the task of building community becomes more complex. The fragmentation in our political system and the variety of political interests come into play as complicating factors.

3. **There is a need for a clearer perspective on how individual and group learning occurs.** As was made clear in the literature review, this issue is not resolved in the OL literature. The same issues apply to schools. The schooling literature on LOs is really a collection of different literatures, at least as we have reviewed it broadly here. For the most part, the professional development literature rejects the idea that teacher learning can occur in isolation by individual teachers. Yet it is

not clear, as was noted earlier, what social learning means. It has multiple meanings. As the literature matures, it should becomes clearer how individual members of a LO do in fact learn in a social context. This issue has special significance for its practical application, namely, in creating successful strategies for building and sustaining LOs in school settings.

4. **The relationship to student achievement needs to be articulated more clearly and documented.** This is one of the most difficult aspects of evaluating LOs. Not only are there multiple goals of schooling, which complicates the evaluation problem, but the need for LOs is most urgent in schools with large percentages of students at-risk of failure. This raises the bar of expectations for what student achievement gains are necessary in pronouncing LOs a "success." Perhaps gains in student achievements will never be directly linked to organizational learning. First, there may be a measurement problem, since LOs often are thought of as part of a broader systemic reform effort, with many interacting components, the evaluation problem is compounded. Models of evaluation which focus on transformation of an entire system, rather than only one program within that system, must differ from traditional program evaluation models. A second reason why the link between LOs and student achievement may be hard to establish is that the causal relationship may be indirect. We are skeptical of tendencies to pronounce OL a success or failure based on this linkage.

5. **The LO literature needs to address more clearly how schools which strive to be an LO can better serve students at-risk.** LOs can be created in all kinds of schools. There is a need to improve student achievement across the spectrum. Nonetheless, the need for new models and approaches is most critical in schools with large percentages of at-risk youth. Not only do these students have greater needs than middle-class and socially advantaged youth, which schools must address in order to help students become motivated and successful learners, but the schools which serve these populations often have high teacher turnover, the least well-prepared teachers, fewer resources, and a host of related impediments. LOs are unlikely to succeed in these challenging settings without strong leadership and attention to the requirements in #6 below.

6. **What are the administrative and organizational requirements (processes, structures, resources) for building and sustaining LOs?** We suggested some of these requirements above (shared vision, ethic of caring, etc.). However, the required local conditions (those proximate to the

school site) may involve many other factors, such as new ways of organizing the school day to afford time for professional development and planning, networks with external resources, etc. The enumeration of these conditions is likely to be different in different contexts (elementary vs. middle-school, city vs. suburb, large at-risk populations vs. low at-risk percentages). These requirements need to be enumerated more fully as a more complete research literature is built.

7. **There is a need to understand better how the policy environment facilitates or impedes learning**. If schools are embedded in a larger policy environment, they cannot wall themselves off from these forces. For example, efforts at systemic reform are designed to make federal, state, and local policies better aligned with one another. Policies from higher levels (district, state, and federal levels) impact on individual schools in complex ways. Regulatory policies as well as resources have important implications for what schools can and cannot do. Many of these policies impact, directly or indirectly, on efforts by local schools to transform themselves into LO s. However, the literature on LOs has given little systematic attention to these external requirements.

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At present the literature on LOs is an exciting area of inquiry. It carries profound implications for the redesign of teaching and learning processes, the way school professionals define their roles, and the way schools are structured and regulated. As yet, however, these implications have remained implicit rather than explicit in the literature. As a field of inquiry, the literature on LOs still lacks clear focus in terms of definitions and problems to be addressed. Hopefully, these shortcomings will be addressed so that we can look forward to its maturation as a field of study in the years ahead.

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